AMERICAN NURSERYMAN

and The NATIONAL NURSERYMAN

MARCH 15, 1940

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Selection of Narrow-leaved Evergreens
Landscape Design in Practice
Vitamin B_6 and the Rooting of Cuttings
Spring Spray Schedule for Insects

AMERICAN NURSERYMAN

and The NATIONAL NURSERYMAN

F. R. KILNER, Editor

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MARCH 15, 1940 Vol. LXXI, No. 6

Table of Contents.....Page 40
Index to Advertisers.....Page 42
Cover Illustration Notes.....Page 22

THE WEATHER'S EFFECTS.

The season continues to be notable for weather that is unusual—and not in the California sense of the word!

Most serious are the effects in the south. The longest freeze in Florida history, in late January and early February, was marked by twelve nights on which freezing temperatures prevailed throughout the state. Complete losses were suffered by vegetable growers and truck farmers. Citrus trees in orchards suffered less than expected, though defoliation was heavy and almost universal, and shipments of fruits were larger than had been expected. While blooms and berries were destroyed on the strawberries, little killing of plants was noted, and the crop is delayed four to six weeks. Nursery stock of tender and semihardy varieties suffered top injury in some cases and was killed back to the ground in others. Early estimates of damage have been revised downward, fortunately. The exact extent of the losses is not yet ascertainable, but between the loss of stock and the curtailment of orders because of customers' misfortunes, nurserymen in the lower southeast are not in a happy situation.

In nurseries not so far south, losses in less hardy types of stock are reported, though where semihardy items had been dug before the severe freeze and stored for shipping, damage was avoided. Hardy items, generally grown for shipment north, seem in ample supply.

In other sections of the country freakish weather continued this month. Denver, Colo., experienced its heaviest snowstorm of the year March 1, following unseasonably warm days late in February.

Rain which turned into sleet March 4 did heavy damage to trees from eastern Pennsylvania to Boston, Mass., when ice weighed down the branches to the point where they broke off. The more stiff-limbed brittle trees, such as soft maples and especially white maple and Carolina poplar, were badly broken by the ice in New Jersey, lower New York state and Connecticut. Some elms were badly damaged, so that provisions were made by state control officials for removal of fallen branches in order to avoid spread of the Dutch elm disease infection. While tree trimmers and repair men will be kept busy, outright loss of a large number of trees is not anticipated.

With freezing weather still prevailing in northern states, the question is, what next?

SEE YOUR PRINTER EARLY.

Several hundred nursery catalogues cross the editor's desk each year—forty were mentioned just in the preceding issue—and the progress made in compiling and printing these publications is noticeable when the current issues are placed with the editions of previous years in the reference files.

Indeed, so handsome are some of them that it seems a pity that a few others make so poor an appearance. Often it is more the printer's fault than the nurseryman's, unless the latter has demanded so low a price that a good job cannot be done.

It would not require many additional orders of plants to pay the difference between a good job of printing and a poor one. And how many copies of a catalogue are disregarded by the recipients if it is smudgy and hard to read? The impression probably is that the nurseryman is as much behind the times in his plants as he is in his printing.

Good paper need not be expensive—it is a matter of getting the right type of paper for the job. Good illustrations cost money, but certainly a few can be renewed each year, instead of running worn-down plates that now show flowers in silhouette instead of the original detail. The selection of readable type is important, and in many cases a larger size might easily be employed by a judicious pruning of descriptive copy. Then, an envelope or wrapper which will carry the catalogue safely to its destination, instead of cracking at the edges until the catalogue almost drops out, is important as well.

Improvements can be made with some planning, and to avoid the last-minute rush that occurs with the publication of almost every catalogue, put your problems up to your printer early.

Something might be said about imprinting the prospect's name correctly and neatly on the envelope. It is no compliment to the prospect to have his initials wrong or his name misspelled—and most persons who receive nurserymen's catalogues open their own mail.

CODE OF ETHICS.

Officers of some of the newer state associations of nurserymen have expressed interest in the editorial in the February 1 number with reference to the remarks of Colonel Mumm in the same issue. This concerned the adoption of a code of ethics by an organization and impressing upon the public the desirability of dealing with nurserymen belonging to the association and maintaining such a code. The idea presented was that, since it has been found impossible to legislate undesirable competition out of existence, it should be possible to combat it by making the public more familiar with responsible and upright nurserymen.

Will the secretaries of older state associations which have adopted a code of ethics please send a copy to the editor and, if possible, indicate the date of adoption and the means of enforcement, if any? The information will be helpful as a guide to younger organizations.

THE spring flower festival, La Primavera, to be held April 5 to 7 at Santa Barbara, Cal., will include lectures, demonstrations, slides and movies. Local merchants will coöperate with spring window decorations.

AMERICAN NURSERYMAN

[Registered U. S. Patent Office]

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

MARCH 15, 1940

Selection of Narrow-leaved Evergreens

First of a Series of Articles Similar to the Treatment of Woody Deciduous Ornamental Plants in "Compiling a New Nursery List"—By L. C. Chadwick

The enthusiastic reception by many nurserymen and landscape gardeners of the selected lists of deciduous plants, published in the American Nurseryman and now available in booklet form, warrants a similar treatment of the narrow-leaved evergreens. There is no doubt that there is a need of bringing to the attention of nurserymen, landscape gardeners and landscape architects the possibility and necessity of eliminating many inferior types of narrow-leaved evergreen ornamental plants. Many plantsmen agree that there is little reason for producing and carrying the wide range of these plants frequently listed in nursery catalogues. New species and varieties are often added without discarding any of the inferior types. During about a quarter of a century that narrow-leaved evergreens have been grown abundantly in the United States, the list has grown to include now some 600 to 700 species, varieties and forms. A survey conducted about two years ago indicated that about 120 species and varieties of junipers out of the 200 or more known types were carried by leading nursery concerns in this country. A list of the really necessary and useful types would include about twenty or twenty-five types.

During periods of such rapid increase in popularity as has been enjoyed by the narrow-leaved evergreens, it is only natural that many inferior, quick-growing and short-lived types should have found their way into the trade. Attempts to "make a killing" on some varieties that caught the fancy of the buying public were successful. This practice was followed even though the nurseryman or landscape gardener knew the plant would not be satisfactory in most of the places where it would be used.

New plants have been added continually, but few species or varieties have been discarded. Many of these new additions differed from existing types only in a slight variation in the color of the foliage or the extent of weeping habit. Most plantsmen and landscape architects agree that the percentage of these color cultivars or pronounced weeping types that can be used correctly in landscape plantings is relatively small when compared with the normal, green foliage forms. Perhaps the nurseryman is not the only one to criticize, since he must grow what he can sell. As true as this may be, good business practices do not prohibit him from suggesting to clients the better plants. Truthful suggestions on the part of nurserymen, landscape gardeners and landscape architects would soon eliminate many inferior varieties from the trade.

It seems possible to the writer that certain definite things can be done to obviate the ills now existing. First, all plantsmen should follow a more careful plant selection. Selection, for the most part, should be based on the "need" for the plant. Plants used in landscape compositions should definitely have a purpose to fulfill. The sooner the idea becomes established in the minds of nurserymen and landscape gardeners that they are not selling just plants, but effect, beauty, comfort and value, the better. More attention should be given to how plants can be used correctly. Planting practiced on such a basis will result in satisfied customers—in repeat orders. The selected lists which will be presented in this and future articles will be of value in this connection.

Secondly, more testing grounds are desirable. These should be carefully selected, distributed and supervised to give professional and amateur plantsmen alike a better knowledge of ornamental plants.

Thirdly, a registration bureau might be established, possibly under the jurisdiction of the American Association of Nurserymen, to register or discard new introductions. Such a bureau would need to be free from outside influences, if its recommendations become valuable. The designation by such a bureau of a selected list of plants would not necessarily mean that all other introductions would be kept out of the trade. If the bureau functioned properly, however, and its choices were carefully made, the buying public would soon recognize the value of such lists, and selections of plants would be made almost entirely from them. This would soon eliminate the inferior plants from the trade.

There is a limit to the area to which any one selected list of plants can be applied. The boundaries of such an area are less extensive with narrow-leaved evergreens than for deciduous plants because the soil and environmental conditions are more exacting. It is probable that the lists of plants given will apply to a large portion of the eastern and midwestern states. In other localities such as the Atlantic seacoast, where environmental conditions are somewhat different, they can be used as a standard and modified as extremes in temperature and moisture demand. An example of the variations existing between the midwest and the Atlantic coast is shown by Chamæcyparis obtusa and its varieties. This species and most of its varieties are not entirely satisfactory in Ohio. In the

east, however, some of them may well be classified as among the best of the narrow-leaved evergreens. The prevalence of injurious insects and diseases varies considerably in different localities. This should be considered a basis for modification as necessary. Such lists as presented apply more specifically to local landscape gardeners and to the small growers and retailers who have a more or less localized business than to the wholesale grower who operates nationally.

Size Groups.

The same size group classification as used for the deciduous plants will be used with the evergreens. As a means of visualizing their possible use in landscape practice, plants are frequently divided into definite size groups. These groups, although somewhat arbitrary, may be considered as seven: Group 1, vines; group 2, ground covers, spreading types, about one foot high or less; group 3, dwarf shrubs, one to three feet; group 4, small shrubs, four to five feet, or types that come just below the eye level; group 5, medium shrubs, six to nine feet; group 6, large shrubs or small trees, ten to thirty feet; group 7, standard trees, thirty feet high or more. There are, of course, no narrow-leaved evergreen vines (group 1).

This arbitrary classification of woody plants in definite size groups should tend to broaden our appreciation of the need and use of plant materials and likewise to restrict the number grown. By considering plants in definite size groups, their choice emphatically means that we have need of a plant of that size and character. Group classification likewise enables the selection of the best in each size group, a practice which is necessary. So many of our plants are so nearly alike in texture and color of foliage and in form of growth that one could be substituted for another without changing to any great extent the landscape composition. This fact is especially true of the narrow-leaved evergreens. This being true, more attention should be given the growth habits, the soil and environmental requirements and freedom from injurious insects and diseases. Their ability to stand drought and possible crowding and to hold their lower branches should be considered. The evergreens are more difficult to classify correctly into size groups than are the deciduous plants. These were classified mainly on the basis of their mature size. This practice is not entirely satisfactory with the evergreens because considerable age is necessary before mature size is reached. As an example, the thread retinispora, Chamæcyparis pisifera, may reach twenty-five feet or more at maturity, but it takes considerable time to obtain that size. Its size, in the majority of cases as it will exist during its average life in landscape plantings, will be from four to nine feet. It will be classified in group 5. Other narrow-leaved evergreens showing the same tendency are classified in like manner.

Selected Lists.

The lists presented are of three classes: (1) Selected list, (2) secondary list and (3) plants to discard.

The selected list includes those plants which are considered best within the group, based on such factors and requirements as (a) durability, (b) hardiness, (c) adaptability and (d) growth characteristics.

The question is often raised as to how long a plant should exist in a landscape planting. Durability to the extent of fifteen years has been suggested by some plantsmen. To relieve sameness and monotony, some replanting needs to be done.

Most of the plants in the selected list are reliably hardy in the territory recommended without protection. A few are so satisfactory in other respects that they are included with the recommendation that they be given some protection.

Selected plants should be adaptable to as wide a range of conditions as possible. Soil type and reaction should not be too specific. Most of the plants on the selected list will do well in a variety of soil types and variable soil reactions if such fundamental growth factors as moisture, temperature, good drainage, aëration and nutrients are provided. Adaptability to reasonable exposures and freedom from insects and diseases have been considered.

Satisfactory growth characteristics, such as habit and form of growth, stem and branching conditions, foliage and, to a limited extent, interesting fruits, have been foremost in mind in making the selection.

Undoubtedly the selected list will not be pleasing to everyone as certain "pet plants" are often prominent in nurseries and landscape plantings. All that needs to be said here is that the writer is attemping "to call them as he sees them," based on the stipulations and characteristics given above. The selected lists will contain only about ten per cent of the plants listed.

Correct nomenclature of the narrow-leaved evergreens presents many interesting and vital problems. Many plants now carried in the nurseries are incorrectly named. Some of the names have become common usage and attempts to correct the error will meet with considerable difficulty. Every plantsman should attempt to correctly name his plants even though this may require an abrupt change. Some of the errors now existing in the trade are definitely known and could be easily rectified if the nurserymen would only take it upon themselves to do so. Other errors exist because the correct nomenclature is not known or easily determined. In such cases, the best practice is to follow the recommendations of an authority. Rehder's "Manual of Cultivated Trees and Shrubs" will be followed as far as possible. Bailey's "Cultivated Conifers" will be used as an authority where necessary. The new edition of "Standardized Plant Names" may later furnish a source of correct nomenclature.

The secondary list includes plants which are worthy of limited use or have not been sufficiently tried to warrant placing elsewhere. Some of these plants may, after further study or in other sections of the country, be substituted for some of those now listed in the first group. The secondary lists contain about twenty-five per cent of all the plants listed.

Plants to discard are those plants which are generally inferior because of growth habit or adaptability to general conditions. They may be listed here because other types may be similar and better. They also include some plants which have not been sufficiently tested, but are placed here because of their similarity, at least in description, to others in the list. Varieties based on cone characteristics alone are, for the most part, included on the discard list because seldom are these differences notably effective in landscape plantings.

To save space, common names will be given only for the selected list. These lists should not be con-

sidered final; modifications should be made if additional information proves, or soil and environmental conditions demand, that other plants are worthy of consideration. It is suggested, however, that they be substituted for some other plant in the list and not simply added to it.

It will be noticed that the selected lists will contain relatively few plants with highly colored foliage, weeping habit of growth or other novelties. As mentioned previously, the number of plants exhibiting such characteristics that can be used correctly in the average landscape planting is limited. When such plants really fit into the scheme, and have more than a limited use, they will be added to the list.

It will not be the policy of these articles to discuss all the plants listed. Many of them will be so well known that this will not be necessary. Reasons for placement of many of the plants will be given, especially where similar and common types are under discussion.

GROUND COVERS (Group 2).

The narrow-leaved evergreen ground covers comprise a group of plants which find extensive use in landscape plantings. Terraces, rocky knolls and steep, unsightly banks often present a problem that is hard to master. Many times these banks can be made a thing of beauty by planting some of the evergreen ground covers. Rockeries likewise afford a use for these narrow-leaved evergreens. These low plants provide substance to the rockery not obtainable with small rock plants. Furthermore, these creeping evergreens may be used effectively in the foundation planting between the larger plants.

The list of the narrow-leaved evergreen ground covers is the least extensive of all the groups, containing about twenty-five or thirty types. Some of the types included here, with age, may be thirty inches high in the center of the plant or at the ends of upright branches, but they are of spreading habit and essentially ground cover forms.

A few of the important characteristics of the plants in the selected list may be given here; likewise, their correlation with some of those in the secondary and discard lists.

Juniperus chinensis Sargentii, the Sargent juniper, is one of the most desirable low-spreading evergreens. It forms a dense mass, with the branchlets slightly ascending at the tips, but rarely much more than a foot in height even in the center of the plant. Young plants bear mostly grass-green, acicular leaves, while the older plants exhibit bluish-green, scalelike leaves. These leaves form a definite row-effect, a point that can be used in identification. The plant does well in poor soil and is free from blight. As mentioned for the group, it is useful in the rock garden, for covering steep banks, as a foundation plant and for beds. It does not grow as rapidly as Juniperus horizontalis and its varieties.

Most of the varieties of the common juniper, Juniperus communis, are not satisfactory in landscape plantings because they lack many of the characteristics going to make useful plants. The mountain juniper, Juniperus communis montana, is probably the most desirable variety of the species. It is a low prostrate form, rarely reaching two feet in height. The leaves are crowded on the stem and somewhat cup-shaped on the upper side and abruptly pointed. This variety does not spread so rapidly as many of the ground cover forms, more often forming a flat-topped mass.

Juniperus horizontalis, the creeping juniper, and its varieties are probably used more than any of the other ground cover forms. It is difficult to select the most reliable varieties, since observation has shown that they vary considerably in their adaptability in different regions. Three varieties are chosen for the selected list which show rather striking differences in their habit of growth. Juniperus horizontalis Bar Harbor, in many regions one of the best of the creeping forms, makes a complete cover of gray-green foliage turning to a slaty-purple in fall and winter. It has a tendency to become a little ragged in hot, dry climates when fully exposed to the sun. This plant is sometimes listed erroneously as Juniperus Sabina horizontalis. The Waukegan juniper, Juniperus horizontalis Douglasii, is similar in habit of growth to the type plant, but often does not become so ragged with age, and its foliage turns a deep purple in the fall. Juniperus horizontalis procumbens is not common in the trade. It is one of the lowest of the creeping junipers, often not exceeding two or three inches above the ground. It is compact and maintains its green color throughout the winter. It should not be confused with the species Juniperus procumbens, which is also good, but quite different.

Some of the other varieties of Juniperus horizontalis are of limited use and are, therefore, included in the secondary list. The species itself, a low procumbent plant with long trailing branches, rarely exceeding two feet, is preferred by many to the Waukegan juniper because it does not take on the purple foliage color in the fall. The two are much alike in habit of growth. The species seems to be more susceptible to juniper blight, which is the main reason why it is placed on the secondary list.

Juniperus horizontalis alpina is quite distinct in its growth habit from the other varieties of the creeping juniper. A procumbent plant, its branches extend nearly upright at the ends to a height of thirty inches. The foliage is a steel gray, turning slightly purplish in the fall. It is a rank grower and consequently is of limited value, being used mostly for rough work. The variety glomerata of the creeping juniper is not common. It is characterized as a dwarf type, not inclined to spread, with green scalelike leaves. It does not exceed eight or ten inches in height. Two varieties

[Continued on page 38.]

GROUND COVERS.

SELECTED LIST.

Juniperus chinensis Sargentii — Sargent Juniper.
Juniperus communis montana (nana)—Mountain Juniper.
Juniperus horizontalis Bar Harbor—Bar Harbor Juniper.
Juniperus horizontalis Douglasii—Waukegan Juniper.
Juniperus horizontalis procumbens.
Juniperus procumbens.
Juniperus Sabina prostrata Hillii.
Juniperus scopulorum prostrata.

SECONDARY LIST.

Juniperus conferta.
Juniperus horizontalis.
Juniperus horizontalis alpina.
Juniperus horizontalis glomerata.
Juniperus squamata.
Juniperus squamata prostrata.
Taxus canadensis.

PLANTS TO DISCARD.

Juniperus communis depressa (canadensis).
Juniperus communis depressa aureo-spica.
Juniperus communis Jackii.
Juniperus communis prostrata.
Juniperus horizontalis glauca.
Juniperus horizontalis variegata.
Juniperus Sabina cupressifolia (humilis).
Juniperus squamata albo-variegata.
Juniperus squamata variegata.
Taxus canadensis aurea.

Landscape Design in Practice

II. RENOVATING AN OLD PLANTING FOR NEW OWNERS

By C. Alfred Bolgiano, of J. H. Small & Sons, Washington, D. C.

This planting problem was a case of new owners' wanting to renovate a house and its grounds. The principles which we have tried to bring out in this design are (1) unity by repetition, (2) balance, (3) sequence or movement of interest and (4) mystery.

There was not much planting on the place and most of it was overgrown, as can be seen in photograph 1. The only plants in the foundation planting that were worth keeping were the tall cedar on the left and the Japanese barberry massed in front of it. The barberry had crowded the cedar so that the latter was thin around the base. In order to keep the cedar we had to leave the barberry or else plant some other material to cover this unsightly feature. We thought that the cedar was in a good place, as it could be used to guide the attention from the attractive second-story window with its peaked roof to the entrance and on around the right side of the place which was the only area capable of interesting development. It would also serve to stop the interest of the observer from wandering to the next property on the left. A smaller plant would not serve this purpose so well as the tall cedar.

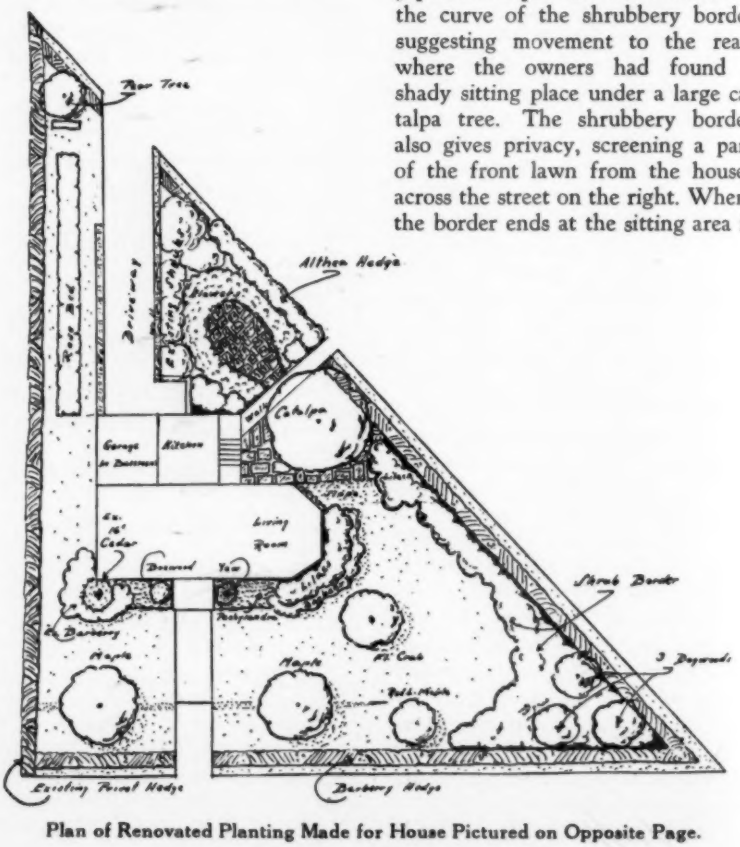
We tore out all of the plants but the cedar and the barberry around its base, keeping the latter because we intended to plant a barberry hedge around the property and having some of the same material in the foundation planting would introduce unity through repetition. As there was a hedge of California privet between this and the next property, it would have been better design to plant privet as a boundary hedge; however, the owners preferred the barberry in order to eliminate the trouble of clipping.

As the house was not designed symmetrically, we decided to plant it asymmetrically or, in other words, to strive for a balance with masses of different shapes on each side of the entrance axis. To carry out the purpose we had in mind when we saved the cedar, we visualized a graceful curve from the top of the cedar leading down through the entrance (photograph 2). We touched the curve with the top of an American boxwood on the left side of the entrance and with the top of a dwarf yew, Taxus cuspidata nana, on the other. Besides carrying out the line of interest, these two dark evergreens gave accent to the entrance. In order to balance the planting across the face of the house, we planted a mass of 7-foot lilacs on the right corner. Barberry was planted in front of it to repeat the barberry on the other side.

In order to frame the house and give depth to the front lawn we planted two Norway maples, as shown on the plan. When one has to look past or through trees to see a house it seems farther away. This effect may be observed in the photographs. When taking photograph 3 the camera was nearer to the house than when taking photograph 1, yet looking over the barberry hedge and past the maple makes the house seem farther back.

The barberry hedge enclosing the place gives unity to the outside view and, together with the shrubbery border, makes the whole place seem larger from the inside. The reason for this is that, when enclosed, an area is regarded as a complete unit and the attention of the observer is confined to it. When not enclosed, it is regarded as a small part of a larger landscape.

After designing the foundation planting and placing the maples and the barberry hedge, our object was to create a movement of interest around the right side of the house. This was already started by the line of the tops of the cedar, box and yew and momentarily stopped to hold attention to the house by the mass of lilacs. To continue this sequence from the viewpoint of the entrance, interest is picked up by the red-leaved Japanese maple and led around by the curve of the shrubbery border suggesting movement to the rear, where the owners had found a shady sitting place under a large catalpa tree. The shrubbery border also gives privacy, screening a part of the front lawn from the houses across the street on the right. Where the border ends at the sitting area is



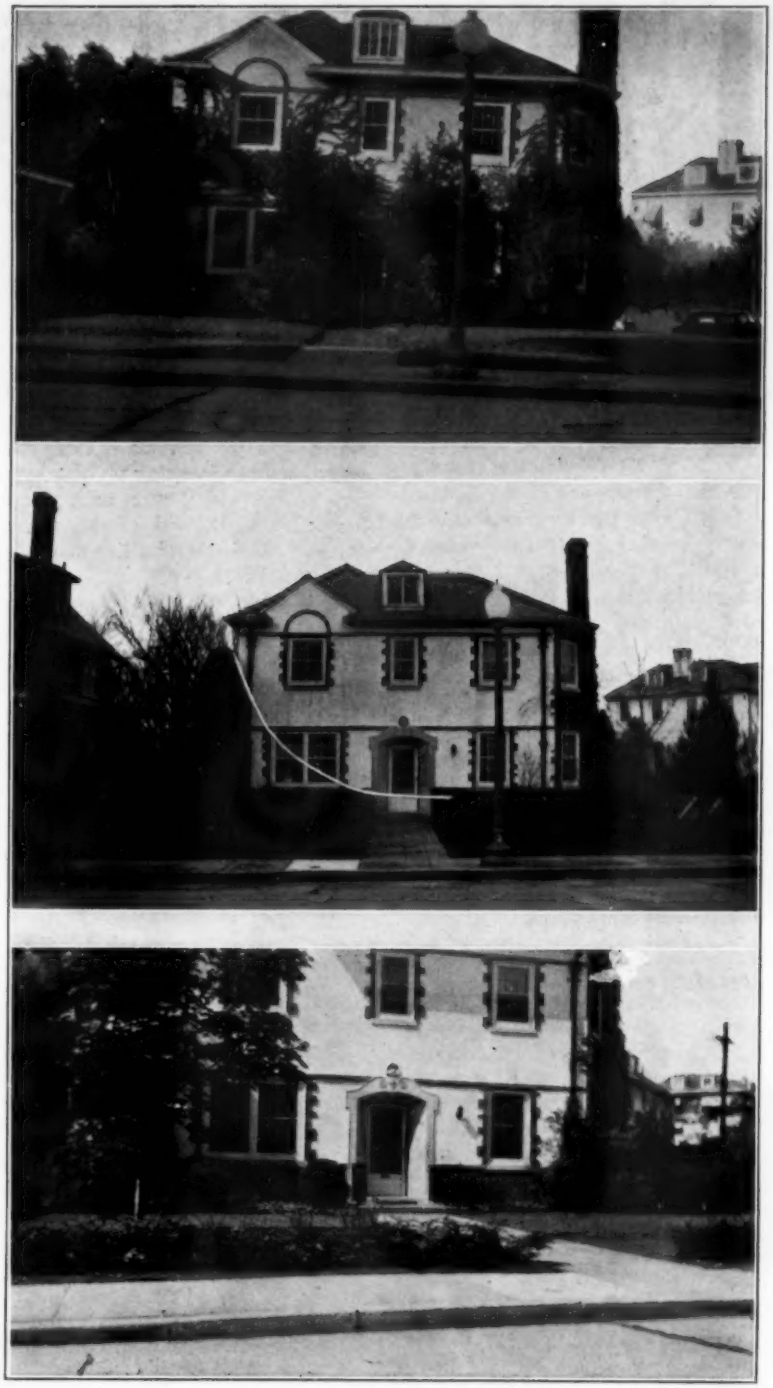
Plan of Renovated Planting Made for House Pictured on Opposite Page.

another group of lilacs, repeating the lilacs off the corner of the house and making an inviting entrance to the sitting area. The floribunda crab apple is a mature specimen, adding a great deal of interest with its sprawling form, its flowers and fruit. It also conceals part of the curve of the shrubbery border when seen from near the entrance. Hence, one sees an invitation to go somewhere, but cannot see the destination. This treatment adds mystery to the effect, which greatly heightens the interest.

Across the service walk from the sitting area was an odd-shaped piece of ground formed by the retaining wall of the sloping driveway and the public walk on the right boundary. Its proximity immediately suggested a concentrated little garden which could be enjoyed from the chairs. Flagstones were laid at random in the center, and perennials and annuals were planted in well prepared beds between the paving and its enclosing shrubbery. An althæa hedge was planted on the street side to make a tall screen which could be kept pruned closely to conserve room.

The owners wanted roses and a real fruit tree; so we made a rose bed in the narrow sloping strip across the driveway and planted the pear tree with a bench under it to block off the houses behind. Hybrid tea roses do not mix well with perennial and annual plants, but seem to look best in beds all to themselves. The bench, at this place, gives a note of restfulness and offers an opportunity to sit and enjoy the roses.

No doubt, there are many homeowners with overgrown plantings who would appreciate being shown the improvement that could be made.



1. House as It Appeared with Old Planting.
2. Lines of Planting Apparent in Winter View.
3. House the First Summer after New Planting.

BUILDING PROSPECTS.

Residential building should register increases over last year during the next few weeks, in view of the recent rising trend in F. H. A. applications for insurance of mortgages on homes.

The volume of acceptances of such applications by the F. H. A. during January was about equal to last year's. In February, however, mortgages accepted for insurance on new homes were five per cent larger than a year ago. Accepted applications are usually translated into actual construction contracts within three weeks after acceptance by the F. H. A.

The applications reported by the F. H. A. cover only title II construction. They do not include the growing number of applications for the building of $2,500 homes under title I of the national housing act. These will help to boost residential construction further this spring, though they will not generate much nursery business because of the low expenditure.

REFUND was received by the Koster Co., Inc., Bridgeton, N. J., in 1939, of $622.55 because of overpayment of social security taxes.

Identifying Woody Plants in Winter

Sixth in a Series of Articles on the Structural Marks and Characteristics of Trees and Shrubs Discusses Key to Evergreens — By Leon Croizat, of the Arnold Arboretum

A botanical key should not be a novelty to the reader. I take it for granted that at some time or other he has used, or tried to use, this glorified form of quiz. A key, as it is well known, consists of assorted brief descriptions which, working by a process of gradual elimination, is supposed to furnish the name of the plant to be identified. We may describe, for instance, a fir as an evergreen with leaves that last throughout the winter and a cone which stands up on the twig and shatters when the seeds reach their maturity; a larch as a conifer that loses its leaves like a deciduous tree and carries a cone that remains entire on the twig often for a long time; a juniper as a berry-bearing evergreen with

Fig. 1—A fully grown cone of Arizona cypress (Cupressus arizonica). In (a) a peltate scale still attached to the core of the cone.

leaves that are either scalelike or needlelike. If these short notes are written down in the usual style of a key, they read as follows:

A. Fruit a cone.
  B. Cone erect, shattering at maturity; leaves persistent ..... *Abies*
  BB. Cone remaining entire; leaves deciduous ..... *Larix*
A'. Fruit a berry.
  B. Leaves dimorphic ..... *Juniperus*

which, so far as it goes, is all readily understood.

A widespread misconception has it that a key is a sure and easy way to knowledge. This notion does not take into account that a key is necessarily written in telegraphic language. A wire always leaves something to be understood. Its text may be obscure either because the sender is unable to make the point clear in few words, or because the receiver himself is not familiar with the subject of the wire. It stands to reason that in some cases the authors of books and articles are not happy in the choice of the characters with which they build their keys. It is just as probable that it is the reader who knows too little and therefore is not in position to use the key to the best advantage. A key, of course, works best in the hands of those who need it least.

It will interest the reader that we wind up our sketchy account of commonly cultivated evergreens by writing up a simple key. Being this time a partner in the writing up of a key, the reader will better understand how a key works and, what is much more important, why a key may not always work.

To separate the ginkgo from other cultivated conifers we have the choice of three characters; namely, the leaf's form, the leaf's being deciduous in the fall and the fruit's being cherrylike (a drupe). We may use any one of these three characters as foremost, that is to say, as the primary key character. If we take advantage of the leaf's form, the ginkgo is set apart from all other conifers with the exception of two, agathis and phyllocladus, which do not interest us here because they are cultivated seldom, if at all. If we rely upon the leaf's being deciduous we are bound to key the ginkgo together with larches, golden larches and bald cypresses, which all go leafless in winter. Lastly, if we choose the

Fig. 2—A cone of cryptomeria (Cryptomeria japonica) nearing maturity, with a peltate scale in (a). Notice the branchlet extending somewhat above the cone and the toothed margin of the scale.

fruit, the ginkgo is to be keyed with the group of the plum-yews and of the stinking cedars, which also have drupes instead of cones. Clearly, the best character is the form of the leaf, because through this character the ginkgo is keyed out in a clean-cut manner and is separated from all other conifers, which is its natural position. Let us not forget that, whenever possible, a key should be built around natural groups, that is to say, around fairly homogenous groups of plants.

The ginkgo being out, we are left to face evergreens that have (a)

Fig. 3—In (1) a cone of incense cedar (Libocedrus decurrens), still unopened. In (2) a fully ripe cone of oriental arbor-vitæ (Thuja orientalis). In (3) a ripe cone of American arbor-vitæ (Thuja occidentalis).

needlelike leaves, or (b) scalelike leaves, or (c) both needlelike and scalelike leaves. The first of these three groups covers the pines, the true cedars, the umbrella-pine, the larches, the golden larches, the firs, the spruces, the hemlocks, the yews, etc., which are the largest group of evergreens in cultivation. The second group is not important from the horticultural standpoint, including as it does only the big tree and the incense cedar. The last group, which has a distinctly dimorphic type of foliage (a foliage of two kinds) is not large, but is important in cultivation, as it includes among others retinisporas, true cypresses, arbor-vitæs and endless forms of junipers.

It is not to be expected that the characters of the leaf alone are sufficient to key all these different plants. Even for a popular key the fruit must be used. This, of course, involves a

serious difficulty, because the fruits of evergreens are often hard to secure and do not occur on immature specimens. Nothing else will serve, however, and the fruit must be used. The reader may judge from this single instance how difficult it is to draw the line between horticultural knowledge and botanical lore. It is desirable, to say the least, that students of horticulture be instructed in the use of dried and pressed samples which are complete with leaves, flowers and fruits.

Brachyblasts (spur-growth) occur on some of the conifers with acicular (needlelike) leaves; namely, pines, unbrella-pine, larches, golden larches, true cedars. The firs, spruces, hemlocks, yews, etc., on the contrary, have no brachyblasts. Thus, the presence or the absence of brachyblasts is an excellent key character. Further subdivisions are possible by the use of secondary characters, as, for instance, (a) the fruit is a cone in pines, larches, umbrella-pine, etc.; (b) the leaves are deciduous in larches and golden larches; (c) the Douglas fir has a sharply pointed bud; (d) the hemlocks have small cones and short, not prickly leaves; (e) the spruces have their branchlets roughened by the fall of the leaves that break off, leaving behind an upraised knob (sterigma); (f) the yews have a peculiar fruit, open above, with a central stone surrounded by a fleshy ring (aril or arillus). The greatest advantage offered by a key is that all these characters can be used in detail, without writing repetitious descriptions of generalities common to several groups.

The evergreens in which the foliage is scaliform (scalelike) are few, as stated, and none of them is important in cultivation. The cone of the incense cedar is illustrated in figure 3 (1) more on account of its quaintness than for any other reason. The dimorphic evergreens have fruits that are once more important characters of identification. The junipers carry berries which actually are cones, built more or less like those of the incense cedar, but having scales that turn soft and almost juicy. In the arbor-vitæs the cones have few and weak scales, as shown in figure 3 (2), (3). In the true cypresses the cone is rounded, woody and has peltate scales, that is to say, scales that have a flattened out naillike head, as shown in figures 1 and 2 (a). Cones with peltate scales also occur on bald cypresses, big trees, redwoods and cryptomerias. The dainty cone of the last-named genus is shown in figure 2, and the scale is illustrated in (a). To close this all too sketchy account I should mention the monkey-puzzle (Araucaria araucana [imbricata]), with its stiff branchlets, its large scaliform leaves and its heavy cone of many scales that fall apart when the seed is ripe.

Gathering together the information of this, and of the two previous articles, we are able to write up the following key:

A. Foliage of deciduous leaves having a free petiole and a blade broader at the tip than at the base; fruit a drupe ..... Ginkgo *(Ginkgo)*

AA. Foliage of scaliform and/or acicular leaves.

B. Foliage of acicular (needlelike) leaves, the shoot itself often more or less scaly.

C. Brachyblasts (spur-growth) present.

D. Foliage persistent.

E. Brachyblasts as clusters of needles (usually 2 to 5, occasionally 1 to 8), not forming a bud ..... Pine *(Pinus)*

EE. Brachyblasts woody, stout, ending with a bud, flowers or cones; foliage of whorls of 10 to 30 needles up to 5 inches or more long, not prickly. ..... Umbrella-pine *(Sciadopytis)*

EEE. Brachyblasts woody ending as in EE; foliage of whorls of 8 to 15 needles not over 2½ ins. long, prickly ..... True Cedar *(Cedrus)*

DD. Foliage not persistent, deciduous in autumn.

E. Brachyblasts small, not over 1/3 in. long; cones persisting on the twig one or more years ..... Larch *(Larix)*

EE. Brachyblasts long, over ½ in. long on the average, with many whorls of fallen leaves; leaves often curving toward the tip; cone shattering when ripe ..... Golden Larch *(Pseudolarix)*

CC. Brachyblasts (spur-growth) not present.

D. Fruit a cone of imbricate (overlapping tile-wise) scales, always longer than broad.

E. Cones borne erect (standing up), shattering when ripe; leaves leaving at their fall generally rounded scars on the smooth branchlets. ..... Fir *(Abies)*

EE. Cones borne pendulous (hanging down), remaining entire; leaves leaving at their fall an upraised knoblet (sterigma), the leafless branchlets therefore feeling rough; needles pungent (prickly), mostly 4-faced. ..... Spruce *(Picea)*

EEE. Cones borne as in EE, with conspicuous free wings under the scales; buds pointed; needles not pungent ..... Douglas Fir *(Pseudotsuga)*

EEEE. Cones borne as in EE, small, less than 1½ in. long; needles not pungent, not over 1 in. long ..... Hemlock *(Tsuga)*

DD. Fruit a cone of peltate scales (see figure 2), about as long as broad.

E. Leaves generally curved toward the shoot and fairly closely set. ..... Cryptomeria *(Cryptomeria)*

DDD. Fruit never a cone, but fleshy or partly fleshy; leaves prevailingly arranged in two more or less spreading rows.

E. Fruit open above, consisting of a stone ringed in by a fleshy disc (aril or arillus) ..... Yew *(Taxus)*

EE. Fruit not open above, consisting of a stone wholly surrounded by a fleshy pulp ..... Plum-yews *(Cephalotaxus, Torreya, Podocarpus)*

BB. Foliage of scaliform leaves.

C. Fruit a cone of few imbricate scales, not over 1½ in. long (see figure 3 (1)) ..... Incense Cedar *(Libocedrus)*

CC. Fruit a cone of over 25 peltate scales, 2 to 3 ins. long ..... Big Tree *(Sequoia, dendron)*

CCC. Fruit a big cone, shattering when ripe, up to 7 and more ins. long; foliage of large, leathery and pungent scales ..... Monkey-puzzle *(Araucaria, in part)*

BBB. Foliage dimorphic (scaliform and acicular leaves at different stages of growth, or on different forms and varieties of the same species).

C. Fruit berrylike ..... Juniper *(Juniperus)*

CC. Fruit of few imbricate scales, not over 1 in. long (see figure 3 (2), (3)); foliage almost always strong-scented when bruised ..... Arbor-vitæ *(Thuja)*

CCC. Fruit of very few peltate scales, scarcely 1/3 in. across ..... Retinispora *(Chamaecyparis)*

CCCC. Fruit rounded, of few peltate scales, not less than ½ in. across (see figure 1); foliage mostly scalelike ..... True Cypress *(Cupressus)*

CCCCC. Fruit longer than broad, of many (15 to 20) peltate scales; foliage mostly in flat open sprays ..... Redwood *(Sequoia)*

CCCCCC. Fruit a very resinous rounded cone of few peltate scales; foliage delicate deciduous, in flat sprays ..... Bald Cypress *(Taxodium)*

WEBERS JOIN WESTOVER.

Walter Weber and George A. Weber, formerly president and vice-president respectively of the H. J. Weber & Sons Nursery Co., St. Louis, Mo., which has been dissolved, have joined the organization of the Westover Nursery Co., Clayton, Mo. Walter Weber will specialize in greenhouse production and sales and George A. Weber in landscape and nursery sales.

William A. Weber, formerly secretary and treasurer of the H. J. Weber & Sons Nursery Co., has opened a new establishment known as the William A. Weber Nursery, Kirkwood.

Spring Spray Schedule for Insects

Timely Applications Recommended to Keep Nursery Clean, in Talk at Maryland Short Course by Dr. Ernest N. Cory, State Entomologist — Reported by Julian J. Chisolm II

Eternal vigilance is the price of clean plants in the nursery. Regular spraying is important in keeping in check the common pests; so the following spray recommendations will prove profitable even though the insects and their depredations are not observable.

In the early spring, before the buds start to swell, send out the spray outfit loaded with twelve gallons of concentrated lime-sulphur for each 100 gallons' capacity of the sprayer. As a substitute for this spray, an oil spray containing three per cent of actual oil may be used. Miscible oils, lubricating oil emulsions or white oil emulsions are satisfactory, but be sure to follow the manufacturer's directions as to dilution, as each material varies in the amount of actual oil.

If there are junipers in the nursery, juniper webworm and juniper scale, two destructive insects, are inevitable. Both require early treatment, and if spraying is delayed it may be too late to be of any benefit. April 10 is the latest date permissible for satisfactory results in Maryland. The safest procedure is to spray junipers now with all the pressure possible, using four pounds of arsenate of lead per hundred gallons of three per cent oil solution. The arsenate kills the webworm and the oil kills the scale and at the same time acts as a spreader. Do not spray when the temperature is likely to go below 40 degrees Fahrenheit before the plants are completely dried.

The first sprays should be applied to acer (except A. saccharum), amelanchier, aronia, buxus, celtis, cornus, cratægus, cydonia, pyracantha, quercus, rosa, sorbus, syringa and ulmus. One or more scale insects are commonly found on these genera; aphis eggs and spider mites will also be checked. If lime-sulphur is used on malus, prunus, aronia and cydonia, many diseased conditions will be reduced.

The large soft brown scales on magnolias and tulip trees must be controlled with a separate oil spray of five per cent strength that is applied before the buds have a chance to swell.

Do not spray oils on sugar maples or beeches.

About May 1 to 15 all evergreens, especially arbor-vitæs, should be sprayed with four pounds of arsenate of lead, four pounds of flour or any good commercial spreader at the manufacturer's recommendations and one pint of nicotine per hundred gallons of water to control bagworm, arbor-vitæ leaf miner, aphis, the willow leaf beetle and many chewing insects.

The bagworms are usually abundant, and it is seldom possible to remove all the bags by hand-picking. These remaining bags may contain as many as 1,100 eggs each and will reinfest trees for yards on either side. Furthermore, the young worms, which are difficult to see at first, are active feeders and are more easily killed by the poison than when they are older.

July 1 is the time to start the Japanese beetle sprays, if the nursery is in the heavily infested areas, using four pounds of arsenate of lead and four pounds of cheap flour to 100 gallons of water. This spray will disfigure the foliage, but it is a comparatively cheap repellent and will remain effective for some time. If the white residue is undesirable on the foliage, rotenone or pyrethrum sprays may be used. However, the latter require repeated applications.

The above are essential sprays every year. In addition, there are many special insects that require special treatments.

Those interested may write to the department of entomology, University of Maryland, and ask for extension bulletin No. 84, an excellent publication by Dr. George S. Langford, on common insects of lawns, ornamental shrubs and shade trees and their control.

Among the special insects is a comparatively new pest of dogwoods known as the "dogwood club gall." This is caused by a small maggot that hatches from an egg laid by a tiny gnat. The maggot leaves the galls in early September, falls to the ground, pupates and remains over winter. The only control is to cut off the galls before September 1 and burn them.

Recently the tips of rhododendrons have been badly distorted by a small midge, the life history of which is not perfectly known. The larvæ cause a rotting of the edges of the leaf, and injury in the bud may leave the unfolded leaves with a lot of shot holes that look something like late frost injury. It is hoped to conduct experiments this year for the control of this insect. Possibly a combination of arsenate of lead and nicotine might be effective if applied early in the spring before the buds have an opportunity to swell.

The azalea lace bug, a similar species on hawthorns and cotoneasters, one on planes and sycamores and a fourth on white oaks are ruinous to the appearance of the foliage. These should be the object of a special spray of nicotine and soap at the rate of one pint of nicotine (Black Leaf 40) and eight pounds of soap per hundred gallons of water. Rotenone or pyrethrum may also be used effectively.

FIRE, believed to have been started by an explosion of gas in the furnace, destroyed the boiler room, office and packing house of Harvey R. Weaver, Lancaster, Pa., March 6.

ALL the plants for the Augusta housing project will be furnished by the Fruitland Nurseries, Augusta, Ga., advises James G. Bailie. One project is for whites and one for negroes, the two complete to cost about $1,350,000.

AT the Paramus Nurseries, Ridgewood, N. J., demonstrations of grafting and budding were given members of the Ridgewood Woman's Club in the afternoon after they had heard lectures on methods of propagation in the morning at their February meeting.

UNDER the title, "The Saga of American Horticulture," Donald Wyman, of the Arnold Arboretum, tells of the travelers who introduced exotic plants into this country and of the early nurseries that made them popular here, in the February issue of House & Garden.

Vitamin B_6 and the Rooting of Cuttings

Experiments Reveal Aid to Propagation by Another Chemical Familiar to Medical Science

—By V. T. Stoutemyer, Bureau of Plant Industry, U. S. Department of Agriculture

Extensive experimentation with plant hormones has led to the practical use of several synthetic plant growth substances such as indolebutyric acid, naphthaleneacetic acid or indoleacetic acid as aids to the rooting of cuttings of many plants. It is now recognized that other internal chemical factors play a part in the process of root formation in cuttings. Among these, the vitamins are beginning to attract the attention of experimenters. Workers at the California Institute of Technology have demonstrated that thiamin (vitamin B_1) may aid the rooting of certain cuttings.

Recent experiments at the New York Botanical Garden[1] and the California Institute of Technology[2] have shown that vitamin B_6, another member of the vitamin B complex, is needed for the best growth of some, though not all, excised roots of plants when cultured in sterile flasks. That formation of roots on cuttings of certain plants is favored by treatments with vitamin B_6 during the rooting period has been shown by recent experiments at the United States plant introduction garden, at Glenn Dale, Md. This vitamin is apparently a root-elongation factor for certain species of plants and also was frequently observed to aid in retaining the leaves on softwood cuttings, an important factor in the rooting of certain difficult species which must be kept in the cutting bed over long periods of time.

Vitamin B_6 is one of about ten members of the vitamin B complex now recognized. It has recently been synthesized by European and American chemists. The German name for this vitamin, "adermin", refers to the fact that a deficiency of this vitamin in the diet of rats produces a form of dermatitis. Since this vitamin includes a pyridine ring, the name "pyridoxin" has been proposed and possibly this may become the accepted common name for this vitamin.

Methods of Application.

Our experience has shown that the beneficial action of this vitamin on cuttings does not necessarily depend on previous treatment with growth substance. The two concentrations used most frequently for both soaking and watering treatments were one part of the vitamin to either one million or five million parts of water. Though higher concentrations were not toxic, the weaker dilutions appeared preferable and possibly much greater dilutions would have been effective.

In soaking treatments, the cuttings were removed from the cutting bed after they had been in the rooting medium for a week or longer and the bases were placed in water for periods of from six to twenty-four hours. This method has generally been used for applying thiamin to cuttings. The untreated cuttings in the control lots were kept in tap water for an equal length of time. Since the soaking treatments would not be practicable in commercial practice, they were abandoned as soon as excellent responses were secured by the much simpler method of watering the sand rooting medium of the cutting bed weekly with solutions of the same strengths as those used in the soaking treatments. With a few exceptions, two duplicate lots, of twenty cuttings each, were used in each trial, and the vitamin treatment was applied by pouring 100 cubic centimeters of the diluted solution over the cuttings of one lot into the sand. The experimental lots were well spaced to prevent accidental contaminations while applying the solutions. Cuttings received plain water between the weekly treatments as frequently as the weather conditions required. The treatments applied an amount of water approximately equal to that used in an ordinary watering of the bed. Since vitamin B_6 did not seem to be at all critical in the matter of

TABLE 1

ROOTING OF CUTTINGS OF SPECIES APPARENTLY BENEFITED BY TREATMENTS WITH VITAMIN B_6

Subject and Rooting Period	Initial Treatment	Vitamin B_6 Treatment	Total Per Cent Rooted	Heavy Rooting	Medium Rooting	Light Rooting	Alive Not Rooted
Buxus sempervirens suffruticosa Oct. 16 to Nov. 30	None	None	23		18	5	28
	None	B	55		13	42	25
	MIB	None	25	2	10	13	43
	MIB	B	40	12	20	8	35
Buxus sempervirens Handsworthii Oct. 16 to Nov. 30	None	None	20		2	18	18
	None	B	48	3	15	30	10
	MIB	None	18		10	8	33
	MIB	B	38	8	15	15	35
Chionanthus retusa June 28 to Nov. 30	IB	None	0				25
	IB	A for 18 hrs. on June 28	10				75
Cyrilla racemiflora Sept. 12 to Nov. 9	None	None	33	8	5	20	23
	MIB	None	15	5	5	5	25
	MIB	B	45	15	2	28	13
Lonicera nitida Oct. 18 to Nov. 17	None	None	83	33	30	20	17
	None	B	98	90	5	3	2
	MIB	None	48		20	28	40
	MIB	B	85	62	15	8	2
Phillyrea angustifolia June 23 to Oct. 9	MIB	None	46	13	20	13	54
	MIB	A for 18 hrs. on July 20	67	40	20	7	33
Phillyrea angustifolia Oct. 13 to Dec. 28	MIB	None	13		8	5	30
	MIB	B	35	5	20	10	24
Symplocos paniculata June 23 to Aug. 5	IB	None	8	4		4	4
	IB	A for 6 hrs. on July 7	40	24		16	26
Symplocos paniculata Aug. 5 to Sept. 8	IB	None	0				28
	IB	A for 24 hrs. on Aug. 15	25	18		7	23

1. Robbins, W. J., and Schmidt, M. B. Vitamin B_6, a growth substance for excised roots. Proc. Nat. Acad. Sci. 25:1-3. 1939.

2. Bonner, J., and Devirian, P. S. Growth factor requirements of four species of isolated roots. Amer. Journ. Bot. 26: 661-665. 1939.

dosage, it doubtless could be used in commercial practice by placing small measured amounts of a concentrated stock solution in a sprinkler watering can so that the treatment would be applied in routine watering of the cuttings. This method should be both simple and inexpensive because of the high dilutions required. Concentrated aqueous solutions of this vitamin apparently kept their effectiveness over extended periods of time when stored in an ordinary household refrigerator.

In these trials of rooting no attempt was made to root all of the cuttings in the lots since each experiment was terminated when root development was at a stage likely to show the distinctions between the different treatments most clearly. For this reason, the duration of the rooting period is indicated for each trial. These cuttings were all rooted in a propagating greenhouse; in most cases on an open bench. Bottom heat was often used, but temperatures were probably below optimal in some cases.

Cuttings were grouped according to the heaviness of rooting by somewhat arbitrary standards which necessarily varied to some degree with the species. Usually a cutting having only one or two long roots or less than a half-dozen short roots was classed under "light rooting". Frequently the roots were counted and measured on each individual cutting. The condensed data are shown in tables 1 and 2.

With a few exceptions as noted, all growth substances used in the initial treatments were applied to the bases of the cuttings as mixtures of one part of the growth substance to 1000 parts of talc. The esters or potassium salts of the usual growth substances are often less expensive than the free acids as well as more soluble and effective. It is difficult to understand why they are not in more common use. In these experiments, methyl-indolebutyrate, designated in tables 1 and 2 as (MIB), was generally used, although indolebutyric acid (IB) was employed in a 1-250 strength in the case of the cuttings of Chionanthus retusa and in a 1-500 strength with Symplocos paniculata. An aqueous solution treatment was given to the cuttings of Alaska pea, and the bases were soaked for eighteen hours in a solution of twenty milligrams of indoleacetic acid (IA) per liter of water.

Results of application of vitamin B_6 at two strengths are shown in tables 1 and 2, using both watering and soaking methods of treatment. The stronger concentration of vitamin B_6 is designated as solution "A" and had one part of the vitamin in one million parts of water (one milligram per liter). The weaker solution "B" contained one part of the vitamin to five million parts of water. Soaking treatments are indicated by the inclusion of the date and the duration of the treatment in hours. Use of the letters "A" and "B" alone refer to treatments which were given by weekly waterings, using 100 cubic centimeters of the solution on each lot of 20 cuttings. All data in the tables are the combined averages of rooting in two replicated lots of twenty cuttings, each receiving the same treatment, except that single lots were used in the cases of chionanthus, nathusia and Citrus sinensis.

Cuttings Showing Responses.

Some favorable responses to this vitamin are evident in table 1, but some of the results deserve additional explanation, since they cannot be expressed by numerical data. The condition of the tops of the cuttings was often influenced by the vitamin.

Rooting of cuttings of Symplocos paniculata was helped by the treatments with vitamin B_6 in two repeated trials. This is a difficult subject to root, since it drops leaves readily in the cutting bed. The vitamin treatment caused a marked reduction in the leaf fall and increased the number of cuttings alive at the end of the experiment. The superior rooting with the vitamin treatment in this case should probably be attributed to an indirect effect resulting from the greater effective leaf area. Rooting was not so heavy in the second trial, which was possibly due either to the longer soaking treatment or to the greater hardness

TABLE 2

ROOTING OF CUTTINGS OF SPECIES GIVING NEGATIVE OR DOUBTFUL RESPONSES TO TREATMENTS WITH VITAMIN B_6

Subject and Rooting Period	Initial Treatment	Vitamin B_6 Treatment	Total Per Cent Rooted	Heavy Rooting	Medium Rooting	Light Rooting	Alive Not Rooted
Aristolochia sp.	None	None	75	27	8	40	23
Sept. 15 to Oct. 11	MIB	None	63	23	8	32	13
	MIB	A	73	25	15	33	27
Deutzia sp.	None	None	33	8	8	17	60
Sept. 9 to Oct. 17	MIB	None	33	13	10	10	58
	MIB	A	40	15	10	15	55
Nathusia sp.	None	None	10			10	85
Sept. 9 to Oct. 20	MIB	None	45		20	25	55
	MIB	A for 6 hrs. on Sept. 20	30	10	15	5	65
Pachysandra terminalis	None	None	18		3	15	82
Sept. 13 to Oct. 9	MIB	None	93	35	30	28	7
	MIB	B	85	40	33	12	15
	MIB	B	95	65	20	10	5
Peas, Alaska	None	None	23		9	14	53
Sept. 20 to Oct. 10	IA	None	64	8	39	17	29
	IA	B for 18 hrs. on Oct. 3	62		29	33	23
	IA	A for 18 hrs. on Oct. 3	58	2	33	23	36
Pyracantha coccinea	None	None	53		18	35	27
Lalandii	MIB	None	48		38	10	10
Sept. 13 to Oct. 11	MIB	A for 6 hrs. on Sept. 20	68		33	35	17
	MIB	B for 6 hrs. on Sept. 20	88		50	38	10
	MIB	B	83		50	33	8
Pyracantha coccinea	None	None	85	2	23	60	15
Lalandii	MIB	None	100	33	37	30	
Oct. 12 to Oct. 26	MIB	B	77	2	33	42	23
Citrus sinensis	None	None	50			50	50
Sept. 12 to Oct. 3	MIB	None	70			70	30
	MIB	A for 6 hrs. on Sept. 20	85			85	15
Tripterygium sp.	None	None	40		5	35	60
Sept. 12 to Oct. 26	MIB	None	50		10	40	45
	MIB	B for 6 hrs. on Sept. 20	40	2	8	30	52
	MIB	A for 6 hrs. on Sept. 20	45			45	55

TABLE 3

RESPONSE OF CUTTINGS OF LONICERA NITIDA TO TREATMENTS WITH VITAMIN B_6

Treatment	Per cent rooted	Dry wt. tops (grams)	Dry wt. roots (grams)	Average number of roots per rooted cutting	Average length of roots per rooted cutting (centimeters)
None	83	3.42	0.26	9	15
Weekly watering with vitamin B_6 solution	98	3.32	0.90	17	54
Methyl-indolebutyrate in talc 1-1000	48	2.97	0.03	15	16
Methyl-indolebutyrate in talc 1-1000 and weekly watering with vitamin B_6 solution	85	3.24	0.60	16	39

and maturity of the cutting wood later in the season. In our experience, long soaking treatments of cuttings, regardless of the nature of the solution, often seem to be undesirable.

Phillyrea angustifolia is a slow rooting subject which responded well to treatment with vitamin B_6. Some increase in heaviness of rooting was noticeable in the first trial, and in the second, the percentage of rooting was increased and the vitamin treatment prevented falling of the leaves in a remarkable manner, which was evident to the eye shortly after the treatments began.

The effects of the vitamin on cuttings of Cyrilla racemiflora are shown only partly by the table. Cuttings treated with vitamin B_6 retained the leaves much better than the lots which did not receive it and the autumnal coloration of the leaves of the cuttings was greatly delayed.

Cuttings of two varieties of Buxus sempervirens did not respond well to treatments with growth substances, but were benefited by the vitamin treatment.

Cuttings of Chionanthus retusa, a difficult subject, rooted only in a lot treated with vitamin B_6 and the tops of the cuttings in this lot were in the best condition at the end of the period. Since this trial was not replicated, this response can hardly be attributed to the vitamin without further experimentation.

Cuttings of Gordonia alatamaha (not shown in the tables) made October 14 could not be rooted with any treatment, although cuttings taken earlier in the season rooted easily. Nevertheless, the cuttings watered with the solutions of vitamin B_6 retained the leaves for a longer period than those which did not receive this treatment.

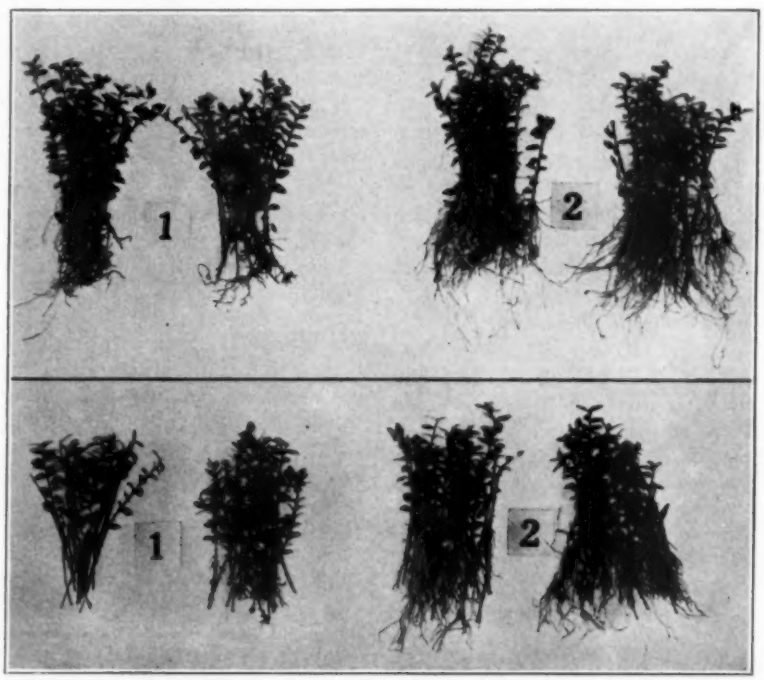
An exceptionally strong response of cuttings to vitamin B_6 is shown with Lonicera nitida. The increased rooting was not a secondary effect, since leaf retention was good in all lots regardless of treatment. These cuttings were in the rooting medium only one month and yet a weekly watering with a solution of one part of the vitamin to five million parts of water increased the length and dry weight of roots almost four times, as may be observed from data shown in table 3. The increases were obtained both with and without the use of an initial treatment with growth substance. The methyl-indolebutyrate treatment did not aid the rooting of this subject, but was somewhat detrimental, and the use of the vitamin plainly helped to overcome the injurious effect of the growth subject on this subject. Two untreated lots of twenty cuttings each are shown in comparison with two similar lots watered with the vitamin in figure 1. In figure 2 the same comparisons are shown for cuttings treated with growth substance.

Cuttings Giving Negative Responses.

Experimental work with sterile cultures of excised roots has shown that the roots of some species of plants do not respond to additions of this vitamin. Pea roots are an example, and as might be expected, the rooting of pea cuttings in our trials was not improved by treatment with this vitamin. In such plants, this vitamin is either not a factor in the life processes or else the roots can synthesize sufficient quantities for maximum growth without difficulty.

Some species used in these trials did not show any unmistakable responses to this vitamin. The data secured from these species is shown in table 2. The response with cuttings of deutzia, aristolochia and nathusia was slight or absent, and it

[Continued on page 32.]



Above—Cuttings of Lonicera nitida. 1. Untreated. 2. Watered weekly with solution of vitamin B_6.

Below—Cuttings of Lonicera nitida. 1. Treated with 1-1000 methyl-indolebutyrate in talc. 2. Treated with 1-1000 methyl-indolebutyrate in talc and watered weekly with solution of vitamin B_6.

This Business of Ours

Reflections on the Progress and Problems of the Nurseryman—By Ernest Hemming

THE TREE DOCTOR.

If you asked a practical nurseryman if he could diagnose the health condition of a tree or plant, you would likely be answered by a grin or the statement that "tree doctor patter gives him a pain in the neck." Sure, he could tell if a plant was not doing well and maybe he could tell you the reason, but his knowledge would be largely empirical.

It is doubtful if he could explain why the tree or plant looked the way it did. It has been stated that even the best of us do not use more than sixty-seven per cent of our brains. And we are far more apt to repeat what we have read or what someone has told us than to do our own thinking.

Let us go and examine a 12-foot Norway spruce and see what it will tell us. As the common name indicates, it is indigenous to northern Europe, a region where it is much cooler and moister than most of our Atlantic states, and the plantsman has learned from experience that in this country it is a short-lived tree and unless favorably situated loses its lower branches and begins to look ratty by the time it is 25 years old. A tree growing south of the isothermal line governing its distribution, or at a lower altitude than in its native habitat, is likely to be subject to disease and pests.

But what does our 12-foot Norway spruce tell us? The most obvious thing is that it made eighteen inches of growth during 1939, this being the length of growth of the leader from the last tier of branches. In 1938 it made fifteen inches of growth, in 1937 twelve inches; in the spring of 1936 it was evidently transplanted, as it shows only two or three inches as against ten inches the year previous. As we follow on down the trunk we note another transplanting or very dry summer. So to those who can read, the tree reveals its complete history at a glance, each branch checking with the leader to the year it started from the trunk by the number of divisions of the branch. When the trees get old and lose their lower branches they are not quite so easy to read, but the history is recorded in the archives of the trunk by the annual rings. Thus the annual growth tells the plantsman at a glance if the tree is in good condition.

Another important guide is color and substance of the leaves or needles. The trained eye can tell at a glance the condition of the plant by the color, especially if the Norway spruce has an attack of red spider. But, perhaps, the surest way to diagnose the condition of any kind of evergreen is by the amount of foliage it is carrying. Our particular spruce still has leaves on its 4-year-old wood, indicating a vigorous, healthy condition.

To be an "honest to goodness" tree doctor requires more knowledge than just enough to take advantage of the ignorance of the tree lover.

E. H.

ARE YOUR BOOKKEEPERS GOOD SALESMEN?

I have often wondered just how many good customers are lost by bookkeepers' poor judgment. We are apt to think of bookkeepers as the antithesis of salesmen, but I think the way they manage their accounts and send their statements and invoices has a lot to do with the return of old customers.

Right now I am speaking chiefly of the retail nursery, although the article applies to all branches. In our business, we already have several advantages in this line, one in that our product is a luxury; it is not often bought until it can be paid for. Another advantage is the character of people interested in gardens; crooks are not often tree lovers. We go to a great deal of trouble to get new customers, and then on the very spot where the customer's skin is the thinest we are, if not antagonistic, at least cold-blooded.

I had a job once in a nursery office with miscellaneous duties. One of the jobs my boss gave me was bill collecting. This was in a city of 50,000 population and in a section rather noted for collection difficulties. I had visions of being thrown out, etc., but I was quite unprepared for what happened. Most of the debtors, if not glad to see me, at least welcomed me, for a large majority had complaints, some of them just, others part of a misunderstanding. Only two or three were obviously deadbeats, and a few more were just unfortunately unable to pay. Instead of writing, "Please remit," on your statements, I am sure it would be better if you wrote, "Is there anything wrong that you feel we should adjust?" I have never tried that yet, but have about come to the conclusion that the customer who would give you the crackpot complaint will be difficult anyhow and it gives a pleasant out to the good customers.

Perhaps the occasion on which bookkeepers can be most annoying is the sending of statements for small amounts. It is all right to send the original invoice, but I don't recommend sending statements for less than a dollar, and unless you have very many, I don't believe I would send them out on amounts under $5, at least, not often. If you have a customer who has bought several hundred dollars' worth of plants, then comes in and buys one small plant to fill in a spot, the chances are he will be back again later; so why pester him, especially if he paid the big bill promptly?

Several years ago I bought an expensive lens for my camera, ordering it by mail after writing for the price. I sent a check in full and shortly thereafter received the lens and also a bill of 20 cents for postage. Since the item was expensive and the charge so small, the policy of the company seemed wrong. The company should have absorbed the shipping charges for cash in advance. Obviously, the bookkeepers were permitted no leeway in judgment.

Here is another instance: Not long ago we sent an order for some needed nursery stock to a firm with which we had always had pleasant dealings. The boss wrote back that he was shipping the stock, but it wasn't up to snuff and we could accept it or not. Upon receiving the stock and finding it not readily resalable, we accepted it at a reduced figure. Having to purchase the same stock elsewhere, I did not pay the bill so promptly as usual; so I got a dun. That stock should never have occasioned a dun, but the bookkeeper didn't know it.

Give your bookkeeper permission

to use his own judgment a little, even if you have a big business. Let him use his own common sense; it is mostly the trifles that annoy. Think of your own attitude when purchasing before you send the dun. Our own business is small enough so that I can give some personal attention to the questionable accounts, and in ten years we have written off as bad debts about three-tenths of one per cent, having threatened to sue only twice.

Sam Hemming.

PLANT PATENTS.

The following plant patents were issued recently, according to Rummler, Rummler & Davis, Chicago patent lawyers:

No. 364. Gardenia. Thomas H. Wright, Los Angeles, Cal. A gardenia plant characterized by its vigorous growth and marked resistance to diseases common to greenhouse gardenias; the bud of the flower, while tight and green, is somewhat pointed; the calyx and peduncle are comparatively short and support the open flower firmly on the stalk in an upright position; the petals of the flower are a pure white and of waxlike texture, opening naturally from the bud and forming a double bloom. The flower continues to open from the center for several days, unfolding from a roselike center, but maintaining a covering of the pistils and stamen; however, when the outer petals yellow with age, there remain additional inner petals wrapped around the center, which when opened are white, the stamens and pistils when thus disclosed being shorter and in less evidence than the stamens and pistils of other gardenias. The fragrance of the bloom is of the characteristic gardenia odor, but more pronounced; the leaf foliage of the plant is a glossy green, the leaf being long and tapering, slightly corrugated and quite narrow; the plant has similarities and differences relative to its parent plants, the Mystery and McLellan.

No. 365. Papaver, or poppy. Lulu M. Rector, Clarksburg, W. Va., assignor to Wayside Gardens Co., Mentor, O. An Oriental poppy characterized by the 2-color combination of flower comprising an upper part of a flame-orange color and a lower part of white.

No. 366. Rose plant. Pedro Dot, Barcelona, Spain, assignor to the Conard-Pyle Co., West Grove, Pa. A new and distinct variety of rose plant of the Pernetiana class, characterized as to novelty by its vigor of growth, freedom of bloom, double petalage and the large size and attractive color combination of its flowers.

No. 367. Rose. Nicholas Grillo, Milldale, Conn. A new and distinct variety of hybrid tea rose, characterized particularly by its strong stems, vigorous growth and its prolific production of flowers, having excellent keeping qualities, lasting fragrance and distinctive unfading and evenly distributed color between Tyrian rose and amaranth purple.

No. 368. Yellow chrysanthemum plant. Clarence C. Mayhew, Sherman, Tex., assignor to the Texas Nursery Co., Sherman, Tex. A new and distinct variety of chrysanthemum plant, characterized by the yellow color of its flowers.

Final Clean-up On

HYBRID FRENCH LILACS AND FLOWERING APPLES

We have, unsold, the following small lots which we will be pleased to quote at a low price. The Apples are all Asiatic types, resistant to Cedar Apple rust.

FLOWERING APPLES

Variety	18 to 24 ins.	2 to 3 ft.	3 to 4 ft.
Baccata cerasifera, (white)	...	20	60
Baccata Jackii, (white)	...	...	200
Brevipes, (white)	...	40	100
Cashmere	70	190	385
Flexilis, (white)	10	...	35
Floribunda, (pink)	...	...	220
Floribunda atropurpurea, (red)	...	195	55
Floribunda atrosanguinea, (red)	15	570	1010
Micromalus, (pink)	160	375	150
Niedzwetskyana, (red)	...	295	170
Orthocarpa, (white)	...	110	...
Platycarpa Hoopesii, (pink)	...	5	17
Prunifolia, (white)	60	55	...
Prunifolia costata, (white)	20	70	135
Prunifolia dulcis, (white)	28	...	...
Prunifolia xanthocarpa, (white)	...	50	50
Prunifolia Rinki, (pink)	...	...	150
Paradisiaca rubberima	10	40	190
Purpurea aldenhamensis, (red)	100	325	120
Purpurea Eleyi, (red)	...	215	715
Ringo	70	100	100
Robusta, (white)	...	...	40
Robusta Joan (1 bundle), (white)	16	...	20
Sieboldii, (pink)	...	80	160
Sieboldii arborescens, (pink)	25	320	120
Sieboldii pendula, (pink)	...	40	90
Sieboldii calocarpa, (white)	...	...	120
Sikkimensis, (pink)	10	25	40
Transitoria, (white)	...	10	40
Zumi, (white)	...	60	80

HYBRID FRENCH LILACS

Variety	10 to 12 ins.	12 to 18 ins.	18 to 24 ins.	2 to 3 ft.
Chas. Joly, (double—crimson)	915	...	...	...
Chas. X, (single—red, purple)	105	..	...	165
Fuerst Liechtenstein, (single—light lavender)	30	480	675	...
General Sheridan, (double—white)	...	95	...	100
H. Wadsworth Longfellow, (double—light violet)	180	30	...	...
Hugo Koster, (single—pale lilac)	...	...	45	...
Mme. Casimir Perier, (double—white)	35	45	...	...
Mme. Florent Stepman, (single—white)	100	450	...	...
Mme. Maxime Cornu, (single—blue)	50	80	...	...
Michel Buchner, (double—pale lilac)	610	240	...	...
Pres. Carnot, (double—rosy lavender)	...	120	...	...
Pres. Grevy, (double—soft blue)	...	250	260	475
Pres. Ronsard, (single—bluish lilac)	20	...	70	50
Senator Volland, (double—mauve)	...	120	265	...
Vauban, (double—delicate pink)	...	...	110	820

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Excerpts from a Plantsman's Notebook

Further Notes on the Culture, Propagation and Uses of Many Kinds of Plants Given Garden Trial in Years Past—By C. W. Wood

Elsholtzia Farquhari.

(October 15, 1937.) A plant that I have had for several years under label of Elsholtzia Farquhari is one of the joys of the autumn garden. When the seeds arrived from Europe they were labeled "a tender shrub"; actually, it is neither tender nor is it a shrub in this climate. Rather it is a hardy herbaceous plant which sends up many 2-foot stems, each ending in a long one-sided spike of violet-purple flowers in autumn. These are splendid garden ornaments, as well as good cutting material. If the plant bloomed in June, when the garden was full of flowers, it might not be noticed, but its late flowering period is sure to attract attention. Because of its late blooming, it has never produced viable seeds here. It is, however, quite readily increased from greenwood cuttings in summer. I have never been able to establish the validity of the name from the available literature. However, I notice seeds are being offered in this country this spring as Elsholtzia Farquhari, which leads me to suspect that it may be correct. It does well in sunny well drained spots, withstanding drought with complacency. And it should sell well when gardeners see it.

Garden Supplies.

(August 25, 1939.) Stops made at several nurseries during a recent trip through the east convinces me more than ever that the neighborhood grower who does not sell garden supplies is missing a splendid chance to add to his income. No matter how well one organizes his efforts, the plant business is sure to be seasonal, usually coming with a rush for two short periods, one in spring and the other in autumn. Unfortunately, one has to eat all during the year, a few clothes have to be worn and, if one lives in the north, fuel has to be purchased. All of which means outlay of money every day of the year. How good it would be, then, to have a line that would bring in a little income during the dull periods for the plant business. One neighborhood nursery visited has worked up the accessory end of its trade, which includes garden tools, spray material, crockery, fertilizers, seeds, etc., until it has almost become the dog and the plant trade the tail.

Polemonium Blue Pearl.

(May 19, 1939.) No spring-flowering herb of recent introduction brought out so many favorable comments as Polemonium Blue Pearl has this spring. The clear blue color is lovely, to start with, and the flowers are so freely produced for a full month, beginning in April, as to hide the little bushes. The fact that it blooms at a time when the gardening fever is at a high pitch, coupled with the other desirable characters mentioned in the preceding sentence, should make it a breadwinner for the neighborhood grower. I have not had it long enough to speak with authority about its propagation from seeds, though I should expect it to come fairly true.

The Gold-back Fern.

(September 3, 1935.) Although I am a great admirer of ferns and deplore the fact that they are so seldom used in our gardens, I have never been one to clutter up my feeble mind with the mental gymnastics of fern students as they juggle the names back and forth from pigeonhole to pigeonhole, creating new names and combinations after they have worn out the old ones. The foregoing remarks are made a part of what is to follow on the gold-back fern, because it is not at all likely that the generic name, ceropteris, by which I knew the plant, will be in use when these notes appear. Although the plant is native to the coast states from California to British Columbia, it is quite hardy here in northern Michigan and would no doubt be able to stand all except the most severe climates. Wherever it can be used, it would certainly be a good addition to our all-too-short list of plants suited to dry soil in light shade, decorating these difficult situations with golden-backed dark green fronds, which grow up to ten inches in length and to half that in width.

(February 2, 1940.) My supposition that the name would be changed was not without foundation. Reference to a recent fern publication tells me the name is now Pityrogramma triangularis; a more ancient name than either was Gymnogramma triangularis.

Lychnis Chalcedonica.

(January 3, 1938.) It seems to me that personal prejudices which see the light of day in print, often with self-styled authority, do more harm than an army of soldiers. An anemic soul once thought that scarlet was a barbaric color and rushed into print to tell the world about it. Like a lot

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of sheep, others followed the leader; the result has been a pastel complex, which has robbed unthinking gardeners of some of our best plant material, including, among a host of others, the formerly popular Jerusalem cross, Lychnis chalcedonica. During recent years I have heard a number of plant growers say this showy, indestructible plant, which should be loved of American gardeners because it takes so kindly to our conditions, is quite a drug on the market with them. That condition need not prevail long, however, for, with the advent of variety salmonea, the cry about its harsh color can be forever stopped. Salmonea is quite like the type in its 2-foot to 3-foot growth, the only difference being that a pleasing shade of salmon-pink has replaced the scarlet of the other. The color is one that combines well with most shades of border plants; it is something then that can be used lavishly.

Rumex Flexuosus.

(August 18, 1938.) The docks and sorrels are not, generally speaking, of great ornamental value and are, on the other hand, inclined to be weedy. One exception is the western Rumex venosus, which is quite showy in its large red-veined valves during the fruiting season. Another species, R. flexuosus, which came to me a few years ago in seeds, with no information as to its characters or origin, has won a place in my own affections as well as in those of visitors who admire colored foliage. It spreads out a carpet of Oriental richness in red, crimson, copper and brown, over which are displayed short flower stems of bronzy mahogany. Do not let that poorly worded description prejudice you against the plant, for it is really harmonious and quite entrancing, furnishing a pleasing carpet for dry sunny places not obtainable with equal ease from any other plant that comes to mind now. It is easily grown from seeds and easily satisfied in the garden.

Viola Catherine Sharpe.

(December 2, 1939.) All that I can say from personal observation of the new viola, Catherine Sharpe, is that I saw it last summer and liked its large, yellow-eyed blue flowers. If it lives up to its reputation of being hardy, long-lived and everblooming, it will no doubt surpass Jersey Gem in popularity (incidentally, the

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latter is far better than the average seed-propagated stock passing under that name would indicate). The flower of the new variety is almost twice as large as that of Jersey Gem, the color is a lighter shade of blue and, if it is always as floriferous as it was when I saw it, its flower production has been stepped up somewhat. It goes without saying that the only way to keep it really true is to grow it from cuttings.

Erigeron Pinnatisectus.

(February 3, 1940.) Two inquiries during the winter about Erigeron pinnatisectus indicate that this Rocky mountain alpine is getting around and will no doubt reach trade channels soon. Perhaps a few notes on it or something quite like it may help others to decide about taking it on. I am not sure that I have ever had the plant that botanists call pinnatisectus, though a batch of plants grown several years ago from seeds labeled E. compositus correspond with the characters, such as pale violet to whitish flowers on 2-inch to 3-inch stems over tufts of gray, deeply cut leaves. If that is the plant, it blooms profusely during June and often again in autumn, making a pleasing effect in a sunny spot in the rock garden. For comfort to the plants in the east, these alpine fleabanes are better satisfied, however, when given a little shade during the heat of the day. They are scarcely plants for general cultivation here, because with the best of care not many are long-lived, and they do need special care, such as a meager soil and attention to their moisture needs. They come readily from seeds, usually blooming the first fall from early spring sowing.

Chrysanthemum Maximum Esther Read.

(February 3, 1940.) At the outset let me say that I do not pose as an authority on the culture of the rather finicky Shasta daisy, Esther Read. I thought, though, that some of my experiences with it might interest others. Everyone knows that Shasta daisies are gross feeders, but perhaps not all realize that our present variety has a more insistent appetite than most other kinds. I rather have a notion that many of the complaints that it dies out in midsummer can be traced to the fact that it was not well supplied with food. If one starts with a fertile soil and then waters with liquid manure from July onward, he is apt to be surprised by vigorous growth throughout that period, especially if the plants are cut back and top-dressed with well decayed humus, at the end of their first period of heavy blooming. I have noticed, too, that a well limed soil gives best results. In quite hot climates the plants will also welcome some shade.

All the foregoing may sound like a lot of fussing. Perhaps it is, but we shall have to make up our minds sometime that this is a plant which demands some care if we are to succeed with it. Whether or not its fully double, pure white daisies produced quite continuously from June until frost justify this care is something you will have to decide for yourself.

Doronicum Bunch of Gold.

(June 16, 1936.) All leopard's-banes that I have grown are desirable plants, some because of their garden value, others as cut flowers and a few for a combination of these two. Doronicum Pardalianches, Bunch of Gold, is, because it joins these splendid qualities with others of equal merit, a brilliant example of the last group. The literature reminds us that "while all species are typically one-flowered, any of them may have now and then more than one flower on a stem, and this species (Pardalianches) may have one to five flowers." Evidently our present plant, Bunch of Gold, is a selection of the multiple-flowered kinds, for it is habitually many-flowered, holding its bunches of golden daisies aloft on 2-foot stems. As stated before, it is a plant of many uses, being especially valuable in the garden because it blooms later, at least in this climate, than the better known D. plantagineum and its variety excelsum, thereby carrying on the leopard's-bane season. The bunched inflorescence is, of course, its best recommendation as a cut flower, but its pleasing canary-yellow color is also in its favor. It is quite accommodating, doing well in sun or shade, though it will likely need watering if planted in full sun. Here is a plant that should help all growers, neighborhood nurserymen as well as large wholesalers, to more sales. It may be grown from seeds, which should be fresh and fall-planted.

(April 8, 1938.) I accidentally discovered in dividing Doronicum Pardalianches, Bunch of Gold, this spring that it can be propagated from cuttings of its tuberous roots, handled in the manner one follows with gaillardias. Because seeds are uncertain and slow, this will make an easier job of the rapid multiplication of this splendid plant.

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Cornus florida, 12 to 15 ins.	2.00	15.00
Crataegus Oxyacantha, 8 to 12 ins.	2.50	20.00
Cydonia japonica, 6 to 10 ins.	2.50	20.00
Evonymus alatus, 2 to 4 ins.	2.00	15.00
Fagus sylvatica, 6 to 8 ins.	2.50	20.00
Ginkgo biloba, 4 to 6 ins.	3.00	25.00
Ilex crenata, 2 to 4 ins.	2.00	15.00
Koelreuteria paniculata, 6 to 8 ins.	3.00	25.00
Picea pungens glauca, 3 to 6 ins.	2.50	20.00
Pinus flexilis, 3 to 4 ins.	2.50	20.00
Pinus Mugho, 3 to 6 ins.	2.50	20.00
Pinus Mugho, transplants, 4 to 6 ins.	4.00	35.00
Pinus nigra (austriaca), 4 to 6 ins.	2.50	20.00
Pinus resinosa, 4 to 6 ins.	2.00	15.00
Pinus Strobus, 4 to 6 ins.	2.50	20.00
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STATE WAGE-HOUR BILL.

A state wage-hour bill, providing for a minimum wage rate of 40 cents an hour and a maximum work week of forty hours, has been introduced in the New York legislature, at Albany, by Senator Philip M. Kleinfeld, Brooklyn Democrat, and Assemblyman Joseph A. Boccia, Manhattan Laborite.

The bill, sponsored by the American Labor party, provides for supervision of wages and hours by the state industrial commissioner and imposes drastic penalties against violators. Under its terms, employees working more than eight hours a day and forty hours a week would receive pay at time and one-half for overtime up to ten hours a day and fifty hours a week, beyond which overtime would be paid at double the hourly rate.

The proposed legislation exempts domestic servants and farmers, but instructs the industrial commission, if and when the bill becomes law, to set up wage boards to establish minimum rates for servants and farmers. It also gives an employee the right of judicial review from the rates imposed by the wage board. The wage boards, under the bill, would be established by the commissioner in each industry.

Terms of the bill further stipulate that employers who move their business to other states to escape the provisions of the measure would be forbidden to do business in the state. Penalties for employers range from a fine of $25 to $1,000, or imprisonment for six months or both. B. J.

CAMELLIA COLLECTION.

A camellia variety garden, containing 250 plants of some 100 different varieties, in which it is hoped to assemble one or more specimens of each known variety and species of this ornamental plant, was established by the horticultural department of the University of Florida. Plants in the experimental garden, according to R. J. Wilmot, supervising horticulturist, were contributed by Gerbing's Azalea Gardens, Glen St. Mary Nurseries, and Miller Nurseries.

THE former Mecklenburg Nursery, Bensenville, Ill., has been purchased by Gordon Zethmayer, formerly a dealer at Congress Park, Ill.

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Benzoin aestivale, Spicebush	.45	1.50
Berberis thunbergi, Japanese Barberry, c. s.	.75	2.50
" **thunbergi atropurpurea,** c. s., 1000 seeds, $1.00	5.00	16.00
Betula nigra, River Birch, c.s.	.50	1.80
" **papyrifera,** Canoe Birch	.45	1.50
Bignonia radicans, Trumpetcreeper	.65	2.25
Calycanthus floridus, Common Sweetshrub, Northern seed	.50	1.65
Caragana arborescens, Siberian Pea-tree	.50	1.75
Catalpa speciosa, Western Catalpa	.35	1.10
Cedrus deodara, Deodar	.75	2.75
Celtis mississippiensis, Sugarberry, d.b.	.55	1.80
" **occidentalis,** Hackberry, d.b.	.45	1.60
Cercis canadensis, American Redbud	.55	1.85
Clematis texensis, Scarlet Clematis, c.s., ¼ oz., $0.75	...	...
Cornus canadensis, Bunchberry, d.b.	1.05	3.75
" **stolonifera,** Red Osier Dogwood, c.s.	.60	2.10
Corylus americana, American Hazelnut	.30	.85
Crataegus oxycantha, English Hawthorn, c.s.	.35	1.20
Cupressus arizonica, Arizona Cypress (genuine)	.90	3.25
Cydonia japonica, Flowering Quince, c.s.	.90	3.25
Daphne mezereum, February Daphne	1.35	4.80
Fraxinus americana, White Ash	.25	.75
" **lanceolata,** Green Ash	.25	.75
Halesia tetraptera, Great Silverbell	.35	1.25
Juniperus virginiana, Red Cedar, d.b., Northern	.45	1.50
" **virginiana,** Red Cedar, d.b., Platte River	.35	1.25
Kalmia angustifolia, Lambkill, c.s., oz., $1.50	...	...
Laurocerasus caroliniana, Carolina Cherry-laurel	.35	1.25
Liriodendron tulipifera, Tulip Tree	.25	.75
Magnolia fraseri, Fraser Magnolia, c.s.	1.40	5.00
" **kobus,** Japanese Magnolia	.75	2.50
" **tripetala,** Umbrella Magnolia	.50	1.75
Malus baccata, Siberian Crab, c.s.	1.70	5.75
" **coronaria,** Wild Sweet Crab, c.s.	1.25	4.50
" **sylvestris,** French Crab, c.s.	.30	1.10
Morus rubra, Red Mulberry, c.s.	1.10	4.00
Picea excelsa, Norway Spruce	.55	1.75
" **glauca albertiana,** Black Hills Spruce	1.45	5.50
" **pungens,** Colorado Spruce	1.25	4.50
Pinus attenuata, Knobcone Pine	1.55	5.50
" **caribaea,** Slash Pine	.75	2.50
" **jeffreyi,** Jeffrey Pine	.90	3.25
" **lambertiana,** Sugar Pine	.70	2.40
" **montana mughus**	.70	2.25
" **ponderosa,** Western Yellow Pine	.50	1.65
" **resinosa,** Red Pine	1.60	5.50
" **rigida,** Pitch Pine	.70	2.25
" **strobus,** White Pine	.55	1.75
" **virginiana** Scrub Pine	1.65	6.00
Populus nigra italica, Lombardy Poplar	.45	1.25
" **tremula,** European Aspen	.55	1.75
Prunus besseyi, Bessey Cherry, c.s.	.80	2.50
" **cerasifera,** Myrobolan Plum	.25	.75
" **pumila,** Sand Cherry, c.s.	.65	2.25
" **virginiana,** Common Chokecherry, c.s.	.55	1.85
Rhamnus frangula, Glossy Buckthorn, c.s.	.50	1.45
Rhododendron catawbiense, Catawba Rhododendron, c.s., oz., $0.80	...	...
" **Cunninghami,** c.s., ¼ oz., $1.00	...	...
Rosa blanda, Meadow Rose, dried hips	.55	1.75
" **multiflora japonica,** thorny, c.s.	.25	.80
" **multiflora japonica,** thornless, c.s.	.40	1.30
Sambucus caerulea, Blueberry Elder, d.b.	.90	3.25
Sciadopitys verticillata, Umbrella Pine	1.00	3.50
Sequoia sempervirens, Redwood, Genuine Calif. seed	1.00	3.50
Taxus baccata, English Yew	.60	1.75
" **cuspidata,** Japanese Yew	.55	1.75
Thuja orientalis aurea conspicua, Goldspire Arbor-vitæ	.90	3.00
Viburnum cassinoides, Withe-rod, d.b.	.55	1.70

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Diseases of Trees

Up-to-date Information Obtained from Recent Studies of White-Pine Blister Rust — By Dr. Leo R. Tehon

The calendar year 1939 saw the extension of white-pine blister rust on pines and species of ribes into hitherto uninfested areas in the east, but not in the far west, according to a recent report of the federal bureau of entomology and plant quarantine. In the southern Appalachian region infection was found on pine in one new county in Virginia and three new counties in West Virginia, while infection was found on ribes in one new county in Delaware, two new counties in Maryland and one new county each in Virginia and West Virginia.

Most extensive spread of blister rust occurred in north central states. Infection on white pine was found for the first time in two counties each in Ohio, Michigan and Minnesota and in one county in Wisconsin. Infection on various ribes species was also found for the first time in thirteen Ohio counties, nine Iowa counties, two Wisconsin counties, two Minnesota counties and one Michigan county. In Ohio a southward extension of about fifty miles over the previous known occurrence of blister rust was represented by the finding of infected ribes in Champaign county. The new infections on ribes in northeastern and northwestern Iowa seem likely to have originated from centers of pine infection in southern Minnesota.

In the northeastern states, where blister rust is generally prevalent on both white pine and ribes, spread from ribes to pines occurs unchecked in areas unprotected by the eradication of ribes. But in areas thus protected control of spread has been so effective that few, if any, new infections have occurred on white pines.

In the western white pine region no extension of the range of blister rust in eastern Washington, western Montana and northern Idaho was noted over 1938. However, additional infection was found on ribes in Glacier national park. In young western white pine (Pinus monticola) stands in northern Idaho, where some 800,000 acres of white pines have not as yet been reached in the ribes eradication work, the disease spreads rapidly and destructively. A case of blister rust infection found on one sugar pine (Pinus Lambertiana) in California extended the range of pine infection in that state about fourteen miles southward from the Oregon border.

Damage to Young White Pine.

The importance of uncontrolled blister rust as a limiting factor in the development of white pine plantings has been subjected to critical evaluation in a series of interesting experiments carried on in the Charles Lathrop Pack demonstration forest, at Warrensburg, N. Y., since 1928.

Test plantings were established annually from 1928 to 1933, says the report of Ray R. Hirt, of the New York state college of forestry, the planting being made with paper-potted 2-2 Pinus Strobus stock. Some 12,000 young trees were required for the entire experiment.

Every one of the young trees used in the experiment was exposed to infection by being placed on the ground near infected European black currant bushes for twelve or twenty-four hours. Usually from twenty to thirty potted pines were exposed per day. Hence the exposure of the young pines making up one of the annual plantations occupied nearly the entire growing season. Variations in weather from day to day and from season to season influenced the amount of infection obtained in the young pines by this procedure. The proportion of young trees contracting infection as a result of exposure near the currant bushes varied from four-tenths of one per cent in the least successful year to three and nine-tenths per cent in the most successful year, and the average for all six years was approximately two per cent.

That the amount of infection obtained by the experimental procedure was less than might occur if young pines were exposed continuously appears from the fact that among some 190 similar young pines planted and left near infected currant bushes for a full growing season about seventy per cent became infected.

Progress of the infection thus obtained in the young pines was kept under observation for five years. At the end of that period approximately thirty per cent of the infected young trees had died. Another third of the trees, it was clear, had definitely survived infection, because their infected branches had died before the disease had progressed into and become established in their trunks.

Time Between Infection and Canker.

In regions where the northern white pine (Pinus Strobus) is used extensively for reforestation, blister rust is a factor of importance in determining the stand eventually obtained. Advance information on the probable effect of blister rust infection is valuable in determining the amount of replanting that may become necessary as well as for other purposes.

Infection of a white pine by blister rust occurs by way of the needles.

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After entering a needle, the blister rust fungus undergoes a period of growth in the needle and then must grow from the needle into the twig, branch or trunk, where another period of growth is necessary to permit development of the canker and cause injury to the tree. Growth of the fungus takes place so slowly that a considerable period of time elapses between actual infection in the needle and the appearance of even the first canker stages on branch and stem.

Detailed studies of the progress of the disease, from leaf infection to actual spore production by the blister rust fungus on the developed cankers, have recently been reported in a technical study by Ray R. Hirt, who used some 16,000 young pine transplants and studied about 1,000 cankers.

A minimum period of from twelve to fifteen months elapses between the appearance of the needle spot, which gives evidence that infection has taken place in a needle, and the appearance of the bark discoloration, which is the first indication of the development of a canker. The range of three months in the minimum period merely expresses the fact that, although infection of the leaf can occur at any time during a growing season, the fungus itself does not attain sufficient development in branch or trunk to initiate canker symptoms until late August or early September of the year following needle infection.

Needles commonly remain on transplanted young stock for twenty-six to twenty-eight months, a few as long as thirty-eight months, and it would appear that ample time would be allowed for every needle infection to make its way into branch or stem. It appears, however, that growth of the blister rust fungus in the needle takes place so slowly that needle infections located at distances greater than one and three-fourth inches from the needle base seldom extend into the woody parts of the tree before needle fall occurs.

In young pine plantations protected in the usual way by eradication of ribes bushes in the immediately surrounding territory, the few chance infections that occur on branches need not be damaging, if the diseased branches can be removed before infection advances into the trunk. In studying the development

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12 to 18 inches	10.00
18 to 24 inches	16.00
2 to 3 feet	32.00
3 to 4 feet	40.00

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Berberis Thunbergii, Seedlings

Strong and sturdy,	Per 100	Per 1000
6 to 9 ins.	....	$12.50
9 to 12 ins.	....	15.00
12 to 15 ins.	$3.00	17.50
Purple-leaved Vulgaris, 2-yr.,		
12 to 15 ins.	4.00	30.00
Daphne Mezereum, 2-yr.,		
6 to 8 ins.	15.00	....
8 to 10 ins.	20.00	....
10 to 12 ins.	30.00	....
Ampelopsis aconitifolia,		
seedlings, 2-yr.	8.00	....
Funkia variegata,		
3 to 5 eyes	6.00	....

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of cankers, Mr. Hirt found that the rate of extension of cankers downward on branches toward the trunk is at first quite slow, a little more than one-quarter inch the first year, but later more rapid, two inches in the third year. The average time required for the branch cankers on thirty-six carefully observed trees to reach the main stem was three years.

After the main stems of young trees have been invaded by the blister rust fungus, the trees usually succumb to the disease in three or four years, although some may persist for six or seven years. Production of blister rust spores is commonly delayed in young trees until cankers have been established in the trunk for a year or more.

This rather exact information on the time required for different phases of the development of blister rust on young trees makes it possible not only to estimate the amount of replacement necessary in young plantations, but also to schedule economically the operations of replacement, pruning out of infected branches to save trees and destruction of infected trees before production of spores begins, to the certain advantage of the plantation.

Resistant Pines?

In Wisconsin the invasion of unprotected areas by blister rust has resulted in death to most small white pines. But in the midst of abundant opportunity for natural infection one tree in 300 to 500 has survived for several years. Dr. A. J. Riker and T. F. Kouba, of the University of Wisconsin, have made a search among these surviving trees and have selected 163 cone-bearing trees from regions where blister rust has been severe for years.

From these selected trees, now apparently without infection, which had survived under natural conditions for from fifteen to twenty years, Dr. Riker and his assistant collected cones in 1938 and 1939 and planted the seeds from each tree in separate nursery rows. They also made veneer grafts from forty of the selected trees in the spring of 1939 and these grafts are now growing.

When the seedling trees are old enough, they and the grafted trees are to be subjected to both artificial and natural inoculation by blister rust. It seems reasonable to hope that some of these trees will prove resistant.

VIBURNUM SIEBOLDII.

Viburnum Sieboldii is a vigorous, upright plant from ten to twelve feet in height. The branches are stout and often more or less erect in habit of growth. At maturity, however, they often spread somewhat widely. It can be maintained as a relatively compact plant by occasional trimming. With any tendency to crowding the plant will become somewhat leggy with age.

The native habitat of Viburnum Sieboldii is Japan, and it was introduced in this country about 1880. It does well over a large territory.

The leaves are large and glossy green, persisting late in the autumn. They are so large that frequently they give the plant a rather coarse effect. This is especially true when the plants are grown in poor soil, as then the leaves become rather sparse on the plant and their large size is emphasized. There is relatively little effect of fall foliage color in Viburnum Sieboldii. Points used to identify this plant are its large leaves and the rather disagreeable odor they give off when crushed. The latter characteristic is especially noticeable of the young leaves, but is not too readily detectable late in the fall.

The flowers are creamy-white, produced rather abundantly in May and attractive. They do not produce a mass effect, as do some of the other viburnums, especially those of the snowball types, but nevertheless they add an interesting touch of color to many border plantings. The flowers are followed in late summer by pinkish fruits, which finally become black in the fall. The fruits persist on this variety somewhat later than on many of the other types and are more attractive because of that factor.

Cultural requirements of this viburnum do not differ to any great extent from the others. It does prefer a good, well drained soil and can be used in either sun or shade. The viburnums as a group are not particular as to the reaction of the soil, although a slightly acid condition may be preferred.

Viburnum Sieboldii is usually propagated from seeds, which may lie over until the second year before germination. We have found in some recent tests that stratification of seeds for about two months at a temperature of 60 degrees, followed by a period of from two to three months at 40 degrees, will frequently bring about germination the first season.

The plant can be propagated by softwood cuttings, although they do not root so readily as most of the other viburnums.

The use of this vigorous plant is mainly as a border plant to screen the garden. It has been used as a hedge plant in a few cases, but is not so satisfactory as some of the other viburnums. L. C. C.

SOUTHWESTERN NEWS.

Low bidders on roadside improvement projects let recently in Kansas were as follows: Shawnee county, Schell Nursery Co., Wichita, Kan.; Johnson county, Kansas Landscape & Nursery Co., Salina, Kan.; Ellis county, Stamey & Tidd, Hutchinson, Kan.; Douglas county, Oscar H. Schmidt.

Irwin Eggers is starting a nursery on U. S. highway 40 near Mayview, Mo.

The latest government agency to enter the nursery business is the National Youth Administration. It has

ETHICS IN THE NURSERY BUSINESS

No apology—This does not conflict with "Charlie Chestnut."

I intend to expose misrepresentation and unfair competition. We are going to call a spade "a spade." Even whiskey bottles have to print 70%, etc., grain alcohol, and patent medicine, cereals, etc., their pedigree.

I have purchased in department stores what were purported to be 2-year field-grown perennials in a fancy box that were seedlings with two or three leaves or none and a root like the end of a small-size pencil. Believe it or not, I've seen burdock in a box instead of hollyhock.

Bench roses, I believe, are taboo this spring. Therefore, they cannot be sold six for a dollar as 2-year field-grown. Texas, California, Oregon and Northern-grown roses should be advertised and sold as such, and a firm should be prosecuted for putting wrong labels as to varieties on them. I've bought them and bought dead ones, too.

Don't blame the department stores or their salespeople. They do not know any better. I would like comments from any nurseryman or dealer on ethics.

More later.

ARTHUR DUMMETT, 61 W. Grand St., Mt. Vernon, N. Y.

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1/4 ins. up 13½c
3/8 to 1/2 ins. 10c
5/8 to 3/4 ins. 7½c

Peaches — By thousand
3/8 to 1/2 ins. 9½c
5/8 to 3/4 ins. 7½c
7/8 to 1 ins. 4c

Pears — By hundred
1/4 ins. up 22c
3/8 to 1/2 ins. 20c
5/8 to 3/4 ins. 18c

Cherries, Sweet — By hundred
3/8 to 1/2 ins. 20c
5/8 to 3/4 ins. 18c

Cherries, Sour — By hundred
3/8 to 1/2 ins. 18c
5/8 to 3/4 ins. 15c

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Porcelain Ampelopsis, a rapid climber, producing clusters of beautiful turquois-blue, pink, green and cream-colored berries, 2-yr. heavy, 15c.
Raspberries—Chief and **Newburgh,** at very low prices. Write for Wholesale List or send Want List for special quotations.
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3 to 6 ins...$5.00 9 to 12 ins...$12.00
6 to 9 ins... 9.00 12 to 18 ins... 20.00
Ferns, plants and native orchids.
WILLIAM CROSBY HORSFORD, Charlotte, Vt.

established a nursery at Eureka, Kan., with L. Burton, a recent graduate of Kansas State College, in charge. The state N. Y. A. administrator, Anne Laughlin, reports that the purpose of the nursery is to grow trees and shrubs for planting in the parks of Eureka (population 3,575).

There is a shortage of evergreens in the middle west, especially in sizes suitable for immediate landscape effect. All evergreen blocks are being picked over more carefully than ever in an effort to find the trees demanded by the trade.

Mrs. John Sarber, of the Sarber Nursery Co., Topeka, Kan., is making a good recovery from a serious illness, which kept her in the hospital for two weeks during February. The Sarber company has rented a large brick building a short distance from the office to facilitate handling its rapidly growing mail-order business.

Nurserymen do not recall any previous time when damage to nursery stock by rabbits was so severe as during the past winter. The rabbits have been far more numerous than usual because the dry summer of 1939 permitted large numbers to survive, and they have been little used for food because of the prevalence of a disease among them known as tularemia. Widespread and long-enduring snows have made food scarce for the rabbits, so that they have attacked many kinds of trees and other plants usually immune from their depredations. Now that the snow has gone, nurserymen are beginning to realize that their losses are more severe than they had anticipated.

The nursery trade in the southwest has started off slowly this year on account of the long and severe winter. Landscape men who usually take advantage of open spells of weather to catch up on their work were not able to do any planting in January and February, and radio and mail-order houses report that sales are behind a year ago. However, business made a remarkable recovery the first two weeks of March, and nurserymen are hoping for a long cool spring to help make up sales lost earlier in the year. An encouraging fact is the presence of plenty of surface moisture.

THE Del Monte Park Nursery, Carmel, Cal., recently moved from Dolores street to a new location.

SHADE TREES

	Per 10	Per 100
Ash, American		
10 to 12 ft.	$10.00	$90.00
2 to 2½-in. cal.	15.00	140.00
2½ to 3 -in. cal.	20.00	185.00
Elm, American		
10 to 12 ft.	6.50	60.00
2 to 2½-in. cal.	12.50	115.00
2½ to 3 -in. cal.	20.00	175.00
Elm, Chinese		
8 to 10 ft.	10.00	95.00
10 to 12 ft.	12.50	115.00
Flowering Crabs (assorted varieties)		
3 to 4 ft.	4.50	40.00
4 to 6 ft.	6.00	50.00
Maple, Norway		
10 to 12 ft.	10.00	90.00
1½ to 2 -in. cal.	12.50	115.00
2 to 2½-in. cal.	17.50	165.00
2½ to 3 -in. cal.	22.50	200.00
3 to 3½-in. cal.	30.00	275.00
Oak, Pin		
1½ to 2 -in. cal.	16.50	150.00
2 to 2½-in. cal.	20.00	185.00
2½ to 3 -in. cal.	30.00	275.00
Poplar, Lombardy		
5 to 6 ft.	1.80	16.00
6 to 8 ft.	2.00	18.00
8 to 10 ft.	3.00	22.50
10 to 12 ft.	4.50	35.00
Specimen Apple Trees		
7 to 8 ft.	12.50	100.00
Willow, Weeping		
6 to 8 ft.	6.00	50.00
8 to 10 ft.	8.50	75.00

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AMOOR RIVER NORTH PRIVET, 12 to 18 ins. up to 3 to 4 ft.
BARBERRY THUNBERGII, 2 and 3-yr. trans., heavy, principally 12 to 15 ins. and 15 to 18 ins., also 2-yr. seedlings
PEACH TREES, leading varieties, all grades, principally 7/16-in. to 9/16-in. grade.
Send for our new issue, SPRING 1940 Wholesale Price List, now ready.
General assortment and large supply of fine stock. Evergreen Trees and Shrubs . . . Deciduous Trees and Shrubs . . . Perennials and Rock Plants . . . Fruits . . . etc.
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THE WESTMINSTER NURSERIES
Since 1893 Westminster, Maryland

For New England and White Mountain
Evergreens, Trees, Shrubs, Bulbs, Ferns and Wild Flowers
Write for Catalogue.
L. E. WILLIAMS NURSERY CO.
Exeter, N. H.

AMERICAN ASSOCIATION OF NURSERYMEN

RICHARD P. WHITE, EXECUTIVE SECRETARY

636 SOUTHERN BLDG., WASHINGTON, D. C.

SOCIAL SECURITY RULES.

The regulations under the 1939 social security amendments were released February 27. The exemptions sought for employees doing landscape work and for employees in offices on the farm were denied. Consequently, the status of the employees of nurserymen is substantially the same as before the amendments were passed.

There is, however, reports R. P. White, executive secretary of the A. A. N., one major change having to do with the "included-excluded" clause which will render a large portion of these employees exempt for the major part of the year. This clause provides that during any pay period (not more than thirty-one days) if an employee spends fifty-one per cent or more of his time in exempt employment and forty-nine per cent or less in covered employment, all his wages are exempt. On the other hand, if an employee spends the greater portion of his time in nonexempt employment, then all of his wages become taxable. Under this provision, therefore, it is possible for an employee to spend forty-nine per cent of his time planting nursery stock on a client's property and still be completely exempt, provided that the balance of his time is spent in exempt employment such as cultivating or harvesting nursery stock or work incidental thereto. If a separation of time into exempt and nonexempt work cannot be made during any pay period, then all wages of the employee during that pay period are taxable.

In regard to office employees, the situation is somewhat the same. Office employees are exempt if the nursery office is located on the nursery, rather than in an office building off the farm, provided that the work performed by this employee is concerned with the production or harvesting of nursery stock or its preparation for market, preparing pay rolls for exempt employees and other work of a clerical nature relating to production phases of the nursery business, or if the major portion of the employee's time is spent in work described above and can be separated from that portion of the time spent on office work relating to sales, pay rolls for nonexempt employees, collection correspondence, accounts receivable, etc. In offices where it is impossible to make this separation in work performed all wages will become taxable.

In filing the first quarter's return, due April 1, advises Secretary White in the latest news-letter to members, follow the same procedure as in the past, except for the provisions of the "included-excluded" clause. Remember, however, that this clause refers only to pay periods (usually of one week, but may be up to, but not over, thirty-one days). Therefore, it is perfectly possible to make a return for an employee who has worked ten weeks in exempt employment and three weeks in nonexempt employment, and taxes would be due, in this situation, only on the wages earned during the three weeks nonexempt work.

Under the amendments, also, every employee covered by the law must receive a statement in form suitable for retention, showing name of employee, name of employer, wages paid during the period covered by the statement and amount of tax. The statement may cover a calendar year, one, two, three or four calendar quarters, or employers may furnish such a statement to any employee at the time of each payment of wages. In the last case, the statement may show the date of payment of wages instead of the period covered by the statement.

If nursery employers find some of their employees exempt from the law who were formerly covered, do not attempt to obtain refunds for taxes paid on such employees' wages in 1938 and 1939. The amendments specifically provide that such refunds are not allowable.

AT JAP BEETLE HEARING.

Besides the nurserymen who appeared to present their views, as reported in the March 1 issue, the Japanese beetle quarantine conference at Washington, D. C., February 27, was notable for the representatives of state inspection services, farm organizations and railroad interests, all of them likewise in full support of

Pin Oaks — all sizes
Lonicera Fragrantissima
Large Hemlock

AND A

GENERAL LINE OF STOCK

grown in the

Fertile Bluegrass Area

HILLENMEYER NURSERIES
Lexington, Ky.

VIBURNUM CARLESII
(Pink Korean Snowball)
Sdgl. - Tpl. from 2¼-in. pots
$15.00 per 100, $125.00 per 1000
May 1 delivery

These are true Carlesii grown one year in outside seedbed and potted over winter in greenhouse.
Carlesii from seed are preferable to budded or grafted stock as they do not sucker.
Send for complete trade list.
W. N. SCARFF'S SONS - New Carlisle, O.

BERBERIS THUNBERGII ATROPURPUREA
Red-Leaved
Japanese Barberry
Sturdy, two-year-old seedlings

	Per 100	Per 1000
9 to 12 inches	$3.50	$30.00
12 to 15 inches	4.50	40.00
15 to 18 inches	5.50	50.00

Prices on larger quantities will be furnished on application.
HENRY A. DREER, Inc.
1306 Spring Garden Street
Philadelphia, Pa.

GREENING NURSERIES
Monroe, Michigan
Washington-grown
— ROSES —
Pin Oaks — Sugar Maples
Apples — Pears
Shrubs, etc.
Write for Surplus List

TAXUS

Cuspidata
18 to 24 ins. and up to 4 to 4½ ft.
Brevifolia
15 to 18 ins. and up to 2½ to 3 ft.
Hicksii
18 to 24 ins. and up to 4 to 5 ft.
Ilex Crenata
18 to 24 ins. and up to 3½ to 4 ft.
Truck or Carload Lots Only
No Japanese Beetle—Can ship anywhere.

J. E. WEIR, Inc.
Jamesport, L. I., N. Y.

TAXUS

Cuspidata Capitata
1½ to 12 feet.
Best available.
Carloads or truckloads only.

VISSER'S NURSERIES
Springfield Gardens, L. I., N. Y.

Hemlocks
For Hedge or Specimen
Use
Rhododendrons
Kalmia Azaleas

CURTIS NURSERIES
Callicoon, N. Y.
Representative: —
Ralph R. Coe — Box 253 — Painesville, O.

TREES Forest and Xmas Tree Planting Stock

Variety	Size	Age	Per 1000
Japanese Red Pine,	6 to 18 ins.,	3-yr.	$ 5.00
Banks Pine,	8 to 12 ins.,	2-yr.	7.00
Scotch Pine,	3 to 6 ins.,	2-yr.	10.00
White Pine,	2 to 4 ins.,	2-yr.	10.00
Norway Spruce,	3 to 6 ins.,	2-yr.	7.00
White Spruce,	2 to 5 ins.,	2-yr.	10.00
Douglas Fir,	3 to 8 ins.,	2-yr.	10.00
American Arbor-vitæ,	3 to 6 ins.,	2-yr.	20.00

Write for complete circular and prices.

MUSSER FORESTS, INC., Indiana, Pa.

HARDY AZALEAS
Kaempferi, Poukhanensis, Schlippenbachii, Mucronulata, Vaseyi, Enkianthus Camp., Juniperus Rigida, Taxodium Dist., White Spruce, Norway Spruce, Austrian, Mugho Pine, Specimen Yews, 12 to 15-foot spread.
Send Want List
Brimfield Gardens Nursery
243 Brimfield St., WETHERSFIELD, CONN.

BURR'S QUALITY
BERBERIS THUNBERGII
(Japanese Barberry)

SEEDLINGS (1-yr.)	Per 1000	Per 10,000
9 to 12 ins.	$9.00	$70.00
6 to 9 ins.	7.00	50.00
3 to 6 ins.	5.00	35.00

Can ship now or when you say.
C. R. BURR & CO., INC., Manchester, Conn.

the continuation of federal control.

Among the state directors of agriculture or inspection service heads who made statements were J. H. Lloyd and W. P. Flint, Illinois; A. B. Buchholz, New York; D. L. Farlinger, Georgia; M. Craigie, West Virginia; John W. Baringer, Ohio; H. G. Tilson, Kentucky; Frank N. Wallace, Indiana; T. J. Headlee and Edgar G. Rex, New Jersey; R. H. Bell, Pennsylvania; C. S. Wilson, California; E. N. Cory, Maryland, and L. S. McLaine, Canada.

Hugh F. Hall, of the American Farm Bureau, appeared for a number of state farm bureaus, and W. P. Smith, for the Michigan Bean Shippers' Association. Alfred P. Tohm, Jr., assistant solicitor general of the American Railroads Association, expressed strongly the railroads' desire for federal control. J. Horace McFarland and E. L. D. Seymour represented garden clubs, and Joseph S. Merritt, Dundalk, Md., florists. Among the nurserymen who spoke, besides those named in the earlier report, were L. C. Bobbink and Robert Pyle.

The Merchants' Association of New York, which has frequently opposed federal control measures, communicated its recommendation that the federal quarantine against the beetle be continued, after a study by its committee on plant quarantines, headed by Dr. C. Stuart Gager, director of the Brooklyn Botanic Garden.

GLADIOLUS YEARBOOK.

The desire of the New England Gladiolus Society to give its membership as much interesting and valuable material as possible in its yearbook, which is one of the important benefits of membership in the organization, is again evident in the 1940 issue of The Gladiolus, a 272-page edition that exceeds last year's in total pages, though the use of different paper has reduced the thickness. There are more than a score of illustrations, among them several reproductions of new varieties.

THE Ross-Storm Nursery has been moved from North King street to 410 South King street, Alice, Tex.

H. E. JACOBS, nurseryman, San Carlos, Cal., recently spoke on "Herbs in the Garden," before members of the Civic Garden Club, Redwood City.

THE PAUL OFFENBERG NURSERY COMPANY
1988 East Livingston Ave.
COLUMBUS, OHIO

Lowest Prices **Highest Quality**

EVERGREENS
for Lining out

Grafted plants
50,000 out 2½-in. pots
Grafted plants, 1-yr. field

Cuttings, rooted, out of the bench
Cuttings, Bare roots, 1-yr. field

We don't graft on collected understock, but on replanted seedlings only, which cuts down your losses.

Ask for Special list

SPECIMEN EVERGREENS
30 acres choice finished stock

Juniperus	
virginiana glauca, 3 to 4 ft.	$1.50
Mascula, 2 to 3 ft.	1.10
Meyeri, 15 to 18 ins.	1.00
Strieta, 2 to 3 ft.	1.00
Chinensis Variegata, 18 to 24 ins.	.85
Columnaris Glauca, 2 to 3 ft.	1.30
Pyramidiformis, 3 to 4 ft.	1.50
Sabottii, 3 to 4 ft.	1.40
Ketoleeri, 2 to 3 ft.	1.15
Jap. Barberry, Green, 18 to 24 ins.	.06
Barberry, Red, 12 to 15 ins.	.08
Biota Aurea Nana, 12 to 15 ins.	.55
Taxus, 12 to 15 ins.	.60

(Other sizes and varieties available.)

ZEPHYR HILL NURSERY
Springfield, Ohio *Write for list*

EVERGREENS
20,000 Rooted Cuttings, 4 to 8 ins. **Arbor-vitæs, Junipers, Retinisporas** and **Taxus,** ready May 1 delivery in 2x2x4 paper pots. 100% liners, heavy roots intact, no setback. Beetle certificate if necessary.
BARDONA NURSERY, Bakerstown, Pa.

Wholesale growers of the best
Ornamental Evergreens, Deciduous Trees, Shrubs and Roses.
Write for our current trade list.
THE KALLAY BROTHERS CO.
Painesville, Ohio

JUNIPERUS PFITZERIANA
Strong rooted tip cuttings, 4 to 6 ins. $3.50 per 100, $30.00 per 1000.
J. B. BEALLE
Greenwood, Miss.

Old English
BOXWOOD
Wholesale
10 ins. and up — Any quantity
BOXWOOD GARDENS
Mrs. R. P. Boyer, High Point, N. C.

Reviews of New Books

ALLWOOD AUTOBIOGRAPHY.

There is now offered on this side of the water a book which has won much interest, particularly from persons engaged in some branch of horticulture, in Great Britain since its publication last autumn. In two volumes, containing more than 600 pages and numerous interesting illustrations at $3, "The Third and Fourth Generation" reveals many of the thoughts and a few of the biographical incidents in the life of Montagu C. Allwood, already well known in this country for his book on the carnation.

The author is one of the firm of Allwood Bros., carnation specialists, Hayward's Heath, Sussex, England, founded in 1910, "with much confidence, but little capital," when the three brothers were in their early twenties. Sons of a farmer, they early formed their ambition and achieved it by foresighted planning, as well as industry and enterprise. Montagu became an especially competent nursery manager, Edward learned the seed trade and George went to America to learn growing methods there, particularly in regard to carnations. How they made money fast through their novelties, how the war set them back and how their business subsequently developed in fame and fortune comes to light here and there.

But the greater portion of the book consists of observations and meditations by the author on all sorts of things and phases of life. They are divided up into short passages, frequently accompanied by a verse of some sort. Quaint characters in the English village, methods of doing business, good habits and bad discovered in the past generation and in the rising one—a great variety of topics are covered.

NUTRIENT CULTURE.

The most practical book on nutrient culture from a commercial grower's viewpoint is "Growing Plants in Nutrient Solutions," by Wayne I. Turner and Victor M. Henry. Both are floricultural graduates of the University of Illinois, and Mr. Turner has had long experience as a grower and greenhouse manager. The authors give credit to those persons who have made major contributions to this method of growing.

Especially valuable are the detailed instructions on setting up the equipment necessary for nutrient culture, particularly on a commercial scale, though the experimentalist whether he be commercial or amateur is not overlooked, thus greatly broadening the scope of the book. Instructions for converting soil benches to those suitable for nutrient culture are equally foolproof.

Other valuable features are the conversion tables and analyses of various fertilizer salts, which will be of immeasurable help to those making up nutrient solutions from millimolecular formulas. The authors' method of managing the solution seems an entirely feasible and practical plan. Simple testing methods are also outlined. Twelve basic solution formulas that have been tested and found satisfactory are given, together with comments regarding them.

The information given is the result of experience and not problematical statements projected from meager laboratory experiments. Mr. Turner is operating probably the largest commercial installation of nutrient culture under glass in the country, at least in the middle west.

The book is chock-full of informative illustrations, line drawings and charts and has three color plates as well. The price is $3 and the publisher is John Wiley & Sons, Inc.

AMERICAN ROSE ANNUAL.

The 1940 American Rose Annual, issued this month, is notable as the twenty-fifth in the series of volumes. For twenty-five years J. Horace McFarland has been the editor, and his constant goal has been to provide the members of the American Rose

Red Aronia
Black Aronia
Cornus paniculata
Cratægus Crus-galli
Rhodotypos kerrioides
Viburnum molle
Viburnum Opulus

2-year-old strong home-grown seedlings, 12 to 15-in. size.

Write for prices.

HINSDALE NURSERIES, Inc.
Hinsdale, Illinois

Weeping Privet—Something New!
A sport of Privet Amoor River South, which is very hardy and evergreen in this section of the country. All plants are well shaped. Per 100
2-yr., 18 to 20 ins., 3 to 6 canes....$20.00
3-yr., 24 to 30 ins., 3 to 6 canes.... 35.00
E. BUFFA, Florist, 2614 Central, Memphis, Tenn.

BARBERRY SEEDLINGS
Both Red and Green
Cheaper than ever before.
2-yr. Red Oak Seedlings
COOK'S NURSERIES Geneva, O.

AMOOR RIVER NORTH PRIVET HEDGING
Extra fine low branched, young, smooth, pretty. As fine Privet as ever grew. Will make you pretty dollars and "come-again customers."

	Per 100	Per 1000
2 to 3 ft., 6 branches and up	$5.00	$40.00
2 to 3 ft., 4 branches and up	4.00	30.00
18 ins., 2 branches and up, cut back to 18 ins.		20.00

Cash with order—packing free.
Alta Vista Nurseries, Davenport, Iowa

LINING-OUT STOCK

	Per 100
Flowering Crabs—fine bench grafts ready to plant in the field	$5.00
Bechtel's, fragrant double pink.	
Eleyi, semi-double red.	
Niedzwetzkyana, deep rose red.	
Floribunda, single rose carmine.	
Scheideckeri, early pink.	
French Lilac Grafts	5.00
Chas. X, single violet red.	
Ludwig Spaeth, s. deep purple.	
Red Persian, from fine red parents.	
Aronia, red-fruited, 12 to 18 ins., nice	2.00
Barberry, Jap red leaf, 6 to 9 ins., fine	2.00
Cornus Lutea, yellow branch, 9 to 12 ins.	3.00
Hydrangea P. G., 9 to 12 ins., nice.	3.25
Hydrangea Snowball, 2-yr., 9 to 12 ins.	3.00
Hall's Jap Honeysuckle Vine, nice.	1.50
Snowberry, white, 6 to 12 ins.	2.50
Snowberry, red, 9 to 12 ins.	1.50
Spiræa Thunbergii, fine plants	3.00
Tamarix Africana, 12 to 18 ins.	2.00
Birch trees, Eu. White, 2 to 3 ft. fine	4.00
Eu. Mountain Ash, 2 to 3 ft., fine	4.00
Chinese Elm, 2 to 3 ft., fine	2.00

THE HARMON NURSERY Prospect, Ohio

Nursery Stock—Michigan Peat
Leading Growers in the U. S.
I represent 'em in New York and Vicinity
ARTHUR DUMMETT
Jobber and Broker—Wholesale Only
Mount Vernon, N. Y.
Hillcrest 1977 M

Ampelopsis Veitchii (Boston Ivy)

2-yr. transplanted	Per 100
2 to 3 ft.	$12.00
18 to 24 ins.	10.00
12 to 15 ins.	8.00

H. A. MEHAFFEY
Route 1 Painesville, O.

WILLIS NURSERY CO.
Wholesale Nurserymen
Write for price list.
Complete assortment. Low prices.
OTTAWA - - KANSAS

TAXUS CUSPIDATA
Spreading Yew
Improved dark green strain. Best Evergreens for sun or shade, foundation plantings and hedges.
2 to 8 feet
Send for special list.
THE W. A. NATORP CO.
Cincinnati, Ohio

JUNIPERUS PFITZERIANA

	Per 10	Per 100
15 to 18 ins., xxx, B&B	$12.50	$100.00
18 to 24 ins., xxx, B&B	20.00	175.00

HOLTON & HUNKEL CO.
P.O. Box 1747, Milwaukee, Wis.
Nursery at Brown Deer, Wis.

COLORADO BLUE SPRUCE
2-year seedlings

	Per 100	Per 1000
(2-0) 0 to 2 ins.	$1.50	$7.00
(2-0) 2 to 4 ins.	2.00	9.00

F.o.b. Fennville
Seedlings grown from seeds from cones hand picked from blue trees in Colorado.
Michigan-grown seedlings.
WALTER A. STUDLEY, NURSERY
Dept. AN Fennville, Mich.

JUNIPERS
Grafted on Juniperus virginiana understocks, available for spring delivery.
These plants are grown in pots 2½x2¾.

	100	1000
virginiana glauca	$20.00	$180.00
Canærtii	20.00	180.00
Burkii	20.00	180.00
Keteleeri	20.00	180.00
Koteri	20.00	180.00
Schottii	20.00	180.00
pyramidiformis	20.00	180.00
elegantissima	20.00	180.00
Meyeri	20.00	180.00
Smithii	20.00	180.00
Sabina	20.00	180.00
Von Ehron	20.00	180.00
Pfitzeriana	20.00	180.00

These prices are F.O.B. Louisville, Ky. Boxing extra at cost.
LOUISVILLE NURSERIES R 6, Louisville, Ky.

EVERGREENS
For Seventy-six Years Growers of Quality Evergreens
Lining-out Stock a Specialty
Write for Trade List
EVERGREEN NURSERY CO.
Established 1864 : STURGEON BAY, WIS.

JUNIPERUS STRICTA
(Spiny Greek)
Strong rooted tip cuttings
$3.50 per 100, $30.00 per 1000
J. B. BEALLE
Greenwood, Mississippi

Society with an interchange of information that would enable them to grow better roses and to interest still more persons in these garden flowers.

At the same time as the amateur members of the society have been served, each volume has contained material of considerable value to the nurseryman, whether he is a producer or a seller of roses. In the current issue there are not only articles on hybridization and propagation, research in roses at Cornell University, varieties for different parts of the country, practices in rose gardens and the like, but invaluable comments on varieties, particularly the forty-five pages of "Proof of the Pudding," in which the merits of 259 varieties are the subject of comments by 108 contributors in various parts of the country. An editorial, "What Are Cheap Roses?" tells of experiences that resulted from buying roses advertised for about one-fifth the price nurserymen usually ask; the conclusion was that the cheapness was only in the initial price, not the outcome.

The wide variety of topics pertaining to roses included in this silver anniversary issue of the American Rose Annual prevents any detailed listing, but it is safe to say that, while it is only part of what a member of the American Rose Society gets for his annual fee of $3.50, it is full value indeed, for commercial or amateur rose grower.

BEGONIA BOOKLET.

A series of illustrated articles on begonias appearing in the Journal of the New York Botanical Garden from March, 1939, to January, 1940, have been reprinted in a booklet of forty-four pages and cover, available from the garden, Bronx park, New York city, for 25 cents. The illustrations are profuse.

THE Blue Ridge Nurseries, which for the past eight years have operated a display garden and sales office at 3345 North Front street, Harrisburg, Pa., will exhibit at the local builders' show some of the better types of evergreens they use in landscape work and grow at the nurseries at Linglestown. The exhibit will be under the supervision of Kermit Straw, manager.

SURPLUS EVERGREENS
DUNDEE JUNIPER

		Per 10	Per 100
2½ to 3 ft.,	xxx, B&B	$17.50	$165.00
3 to 3½ ft.,	xxx, B&B	25.00	225.00

BLACK HILLS SPRUCE

2 to 3 ft.,	xxx, B&B	13.50	125.00
3 to 4 ft.,	xxx, B&B	18.50	175.00
4 to 5 ft.,	xxx, B&B	25.00	225.00
5 to 6 ft.,	xxx, B&B	31.50	300.00

PYRAMIDAL ARBOR-VITÆ

2 to 3 ft.,	xxx, B&B	12.50	100.00
3 to 4 ft.,	xxx, B&B	15.00	135.00
4 to 5 ft.,	xxxx, B&B	21.50	200.00
5 to 6 ft.,	xxxx, B&B	26.50	250.00

COLORADO BLUE SPRUCE

3 to 4 ft.,	xxx, B&B	27.50	250.00
4 to 5 ft.,	xxx, B&B	30.00	275.00
5 to 6 ft.,	xxx, B&B	32.50	300.00

Visit our nurseries and make your own selections. Write for our complete list.
RIVERSIDE NURSERIES, INC.
Box 113 Thiensville, Wis.

SEEDLINGS
Juniperus Virginiana
(Northern Wisconsin Type)

	Per 100	Per 1000
6 to 9 ins.	$3.00	$25.00
9 to 12 ins.	4.00	35.00

UECKE
EVERGREEN NURSERY
NEW LONDON, WIS.

POTTED EVERGREENS
Greenhouse-grown. Ready for May 1 shipment.

	Per 100
Juniperus — Andorra, Pfitzeriana, Sabina, prostrata, excelsa stricta, 2¼-in. pots	$10.00
Taxus cuspidata capitata, 2-in. pots	10.00
Taxus Hicksii, 2-in. pots	10.00
Pyramidal Arbor-vitæ, 2-in pots.	8.00
Woodward's Globe Arbor-vitæ, 2-in. pots	8.00
EVERGREEN GRAFTS	**Per 100**
Juniperus virginiana Canaertii	$25.00
Juniperus virginiana glauca	25.00
Juniperus virginiana Dundee	25.00
Juniperus scopulorum Hill's Silver	25.00

Write for List of Other Stock.
HOOK'S NURSERY Box 25 Highwood, Ill.

EVERGREENS
Lining-out and Specimens
Fruits and Shrubs
Write for price list
J. V. BAILEY NURSERIES
Daytons Bluff Sta. St. Paul, Minn.

LINING-OUT STOCK
B & B EVERGREENS
Write for our complete catalogue
T. G. OWEN & SON, INC.
South's Largest Florists and Nurserymen
Columbus, Miss.

Lining-out Evergreens
Good assortment of standard varieties. Price list on request.
SCOTCH GROVE NURSERY
SCOTCH GROVE, IOWA

OREGON ROSE INDUSTRY.

Rose growing in Oregon dates back many years. Information gathered from the old-timers indicates that roses were grown in Oregon as far back as fifty years ago or more, but it has only been in the past twenty-five years or so that Oregon roses have gained their national reputation. The industry has more than doubled during the past ten years, because of the fact that the roses produced in that state are giving more and more satisfaction in the eastern market. A comparative estimate shows that ten years ago about one and one-half million were planted and today the amount is around three million.

Most of these roses find their way to eastern markets, a small quantity grown by the smaller firms being sold in Oregon. Although the state of Washington is now producing roses in fair quantity (about 300,000 to 400,000) there are still some Oregon roses shipped into that state. Few roses were shipped from Oregon to California, as California is such a large rose-producing state itself.

Oregon roses are grown in a natural rose-growing climate, with the right conditions to produce top-quality fully matured plants. The first frost comes about October 1, and there is seldom a frost after the middle of April. With ideal growing conditions and ample rainfall, crops usually attain enough growth and perfect maturity by late September or early October. Roses in that district are harvested from the middle of October to December 1.

The soil in which roses are grown in Oregon varies from a shot soil and a sandy loam to a black heavy bottom soil. Each section of the rose-growing district has different types of soil and, consequently, produces different types of roots and tops; some growers prefer the shot gravelly soil, others the sandy loam and still others the heavy bottom soil. Little fertilizer is used, most growers preferring to plant cover crops and rotate their ground. Most growers in this district own and rotate their own ground. However, some of the growers prefer to lease new ground from year to year.

Rose diseases are something Oregon growers have never been bothered with. Fungous diseases, such as black spot, do not exist in the rose fields of Oregon. Virus diseases, such as canker, do not exist or thrive in that climate. With the more or less damp conditions, though, the growers do have the problem of mildew, but this is controlled by constant dusting every six to twelve days throughout the growing season.

There are about twenty-five growers in Oregon, large and small, producing upward of 400 different varieties. It is found that practically every variety does well in this natural rose climate, particularly the Pernetiana types, which do not do well in some climates. These do marvelously well in Oregon, as well as do a good many yellows that are supposely hard to grow.

The alert, wide-awake rose growers in the district are dropping the slower-moving varieties and are growing the newer varieties and more and more of the Pernetiana types and yellow varieties which do not do so well in other climates, as they are finding a ready market for such varieties.

During the past four or five years the Oregon State College experiment station has been working on rose problems pertaining to better rooting of cuttings, better ripening and fall digging, defoliation and better storage facilities. The staff has coöperated thoroughly with the growers, and they have been making real progress. The defoliation of roses by the use of ethylene gas is but one example of methods found to help the growers.

Colorado-Grown
Chinese Elm, seedlings and transplants.
Caragana Arborescens, transplants only.
Now booking orders for spring shipment in combination carloads. Wholesale list on request.
Eastern representative
Ralph R. Coe
Box 253, Painesville, Ohio.
Swink Nursery Company
Box 330
Swink, Colorado

CHINESE ELM SEEDS and SEEDLINGS
Ulmus Pumila (Siberian Elm) and **Ulmus Parvifolia** (Lacebark Elm). Special reduced prices.
HOME NURSERY CO., Richland, Wash.

Field-Grown Rosebushes
HOWARD ROSE CO.
Hemet, California
HOWARD Field ROSES Hemet, Cal.

WASHINGTON NOTES.

R. Bertsch, R. Bertsch & Co., Auburn, Wash., is renewing acquaintances in Indiana and Illinois.

The state forestry department began planting a half-million Douglas fir seedlings in the Elbe vicinity of Pierce county, this month.

Over $64,812 will be spent to uproot and burn fruit trees in abandoned orchards in eastern Washington.

The Treasury Department of the United States before drawing plans for landscaping has been contacting sources and authorities to determine what planting material is available to be planted. This is a fine move on the part of the government because in the past plans have been drawn and bids called for material not available in the section that plans cover.

Reward of $100 for information leading to the apprehension of cul-

PORTLAND WHOLESALE NURSERY CO.
306 S. E. 12th Avenue
PORTLAND - OREGON

To the Trade only

A GENERAL LINE OF NURSERY STOCK
including the following:
FRUIT TREES
ESPALIER FRUIT TREES
FRUIT TREE SEEDLINGS
NUT TREES
SMALL FRUITS
SHADE and FLOWERING TREES
DECIDUOUS SHRUBS
CONIFERS and BROADLEAF EVERGREENS
VINES and CLIMBERS
PORTLAND-GROWN ROSES
BULBS and HARDY PERENNIALS
Also a complete line of NURSERY SUPPLIES

Deciduous stock is still in good dormant condition and can be shipped on short notice. You may wire your order at our expense.

Oregon-Grown
Quality Guaranteed

The season is advancing. Write today for our Wholesale Trade List. Many varieties of conifers and broad-leaved evergreens offered. No packing charge. Shipping costs paid on lining-out stock to any point in the United States or Canada.

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EVERGREENS *Propagators & Growers*
141 S. E. 65th Avenue PORTLAND, ORE.

FRUIT and SHADE TREE SEEDLINGS

Oregon and Washington Grown
Apple, Pear, Mahaleb, Mazzard, Myrobalan
Quince (rooted cuttings)
Chinese Elm Seedlings
Complete Line General Nursery Stock.
Chinese Elm, Transplanted Specimens.
Norway Maple, Lining-out Whips.
Send list of your wants for prices.
New catalogue now ready.
Combination carloads to eastern distributing points.

MILTON NURSERY CO.
A. Miller & Sons, Inc.
Since 1878
Milton, Oregon

Here's a Bargain—
WHILE THEY LAST—
2-year seedlings, well branched, straight and stocky, freshly dug (no storage) with plenty of roots; **Row Run.**

CARAGANA ARBORESCENS
1 to 3 ft.....$5.00 per 1000; 10,000, $42.00

RUSSIAN OLIVE
1 to 4 ft.....$10.00 per 1000; 10,000, $90.00

Please do not order less than 1000. Free packing for cash with order. F.o.b. Fort Collins.

Frank M. Richard, Jr.
P. O. Box 363 Fort Collins, Colo.

	Per 1000
Boysenberry Tips, (strong).....	**$25.00**
Youngberry Tips, (strong).....	**25.00**
Cuthbert Suckers, (strong).....	**15.00**
Newburgh Suckers, (strong).....	**22.50**
Taylor Suckers, (strong).....	**22.50**

DENISON & BLAIR
Troutdale, Oregon

1-YR. CHINESE ELM SEEDLINGS
Hardy, North China strain.
18 to 24 ins., 2 to 3 ft., 3 to 4 ft., 4 to 5 ft.
Now booking orders for above strain of
CHINESE ELM SEED
WASHINGTON NURSERIES
Toppenish, Wash.

prits who smashed many panes of glass in a greenhouse of the State Flower Nursery, Bothell, Wash., was offered by R. A. Pierce, proprietor.

Frank Chervenka, bulb grower, Sumner, Wash., and Bert Nicholls, Holly Greenhouses, Woodinville, Wash., en route to Mexico for a holiday, visited the national flower show at Houston, Tex.

Richard Layritz, Layritz Nursery, and W. H. Warren, superintendent of parks, Victoria, B. C., attended the rhododendron congress held at Seattle.

The second annual Washington rhododendron congress, the object of which is to encourage rhododendron culture and protect the natural plants in the state, was held in the Spanish ballroom of the Olympic hotel, Seattle. Delegates from most sections of western Washington were present.

W. L. Fulmer.

ANOTHER ACROSTIC.

When a section of our country
Abounds in the world's largest
Supply of timber, a grower's first
Hunch would be that here,
Instinctively, would be a
Natural, as far as the
Growing of general nursery stock.
That is exactly what the growers
Of our state are basing their
Numerous acreage of nursery stock on.
Now let's stop a minute to better
Understand some of the interesting
Reasons why so much nursery
Stock, of widespread varieties, feel
Entirely at home. First, we have vast
Rivers and lakes, that provide a
Year 'round supply of water. Secondly,
Matchless soil, deep and rich. The third
Essential feature is our mild climate,
Natural rainfall and moist atmosphere.

Howard E. Andrews.

THE National Lawn Service, 3952 Addison avenue, Chicago, will open a retail nursery at Barrington, Ill., at the end of April to be known as the Rand Road Nursery. Fifteen acres of land will be devoted to a general line of stock, with 1,750 feet of highway frontage. A sales building is being erected. J. H. Slattery and Harry E. Komp, the owners, have done business as the National Lawn Service for twelve years.

A. McGILL & SON
FAIRVIEW, OREGON
Wholesale Only
GOOD WESTERN-GROWN NURSERY STOCK
Fruit Tree Seedlings
Flowering Ornamental Trees
Shade Trees
Roses
Grown right and packed right.
Combination carloads to Eastern distributing points will save you on freight.

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SELECT NURSERY STOCK
Catalogue on request
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OREGON'S BEST SOURCE OF GOOD ROSES IS
PETERSON & DERING, INC.
Wholesale Rose Growers
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Write for List

ROSEBUSHES
200 Varieties
"Hi-Land Grown—They're Hardy" **Send for Trade List**
PACIFIC NORTHWEST ROSE NURSERY
Box 261 ***Wholesale Only*** **Gresham, Ore.**

ORENCO NURSERY CO.
Orenco, Oregon
WHOLESALE GROWERS
Fruit, Shade, Flowering Ornamental Trees, Fruit-tree Seedlings, Roses, Etc.
Very complete line of quality stock
Catalogue sent on request.

Trade Meetings

TO MEET AT PITTSBURGH.

The Western Pennsylvania Nurserymen's Association will hold a reorganization meeting, Tuesday evening, March 19, at 6:30 p. m., at the Hotel Webster Hall, Fifth avenue at Dithridge street, Pittsburgh, Pa. Dinner will be served at $1.50 per person. Dr. L. C. Chadwick, professor of ornamental horticulture at Ohio State University, Columbus, will be the guest speaker. Everyone in the trade is invited to attend the dinner and hear Dr. Chadwick.

L. E. Wissenbach, Sec'y.

PLANT BOARD TO MEET.

The sixteenth annual meeting of the Central Plant Board will be held March 19 and 20 in the Purdue Memorial Union building, La Fayette, Ind. Over 100 hotel rooms are available in the Memorial Union, states P. T. Ulman, secretary of the board, in addition to the hotels in La Fayette.

The first day carries only a business session in the evening, followed by committee meetings. March 20 there will be morning and afternoon sessions, followed by an informal dinner for regulatory officials and later an executive session for the officials.

The program of speakers follows:

MARCH 19, 7:30 P. M.

Report of secretary-treasurer, by P. T. Ulman, Indiana.

Appointment of committees, by J. Carl Dawson, Missouri.

President's address, by J. Carl Dawson.

Report of representatives on National Plant Board, by E. L. Chambers, Wisconsin; Carl J. Drake, Iowa, and (alternate) F. N. Wallace, Indiana.

Report of Chicago meeting of Council of State Governors, by H. F. Seifert, Illinois.

MARCH 20, 9:30 A. M.

"The Inspection of Gladiolus Corms," by C. A. Boyer, Michigan.

"Crown Gall and the Mosaic Diseases of Raspberries," by A. G. Ruggles, Minnesota.

"Experimental Studies on Crown Gall Control on Raspberries by Means of Propagation from Buds in Sterilized Soil," by H. F. Winter, Ohio agricultural station.

"Recent Developments in the Control of Tomato Plant Diseases," by R. W. Samson, Purdue University.

Address by Lee A. Strong, chief, or Avery S. Hoyt, assistant chief, bureau of entomology, United States Department of Agriculture.

MARCH 20, AFTERNOON.

"Domestic Quarantines and the X Disease of Peach," by B. M. Gaddis, bureau of entomology, U. S. D. A.

"Nematodes as Plant Pests and a Discussion of Control Possibilities," by G. Steiner, bureau of plant industry, U. S. D. A.

"Present Status of the Dutch Elm Disease and Japanese Beetle," by Erle G. Brewer, bureau of entomology, U. S. D. A.

"Red Stele Disease of Strawberries," by A. S. Colby, University of Illinois.

"Important Phases of Foreign Quarantines and Inspections Along the Canadian Border," by A. G. Webb, bureau of entomology, U. S. D. A.

"Methyl Bromide Fumigation," by D. B. Mackie, California.

"A Noninfested State's Observation of the European Corn Borer Situation," by L. M. Gates, Nebraska.

"A Possible Substitute for Federalization of State Nursery Systems," by T. L. Aamodt, Minnesota.

MICHIGAN 1941 DATES.

To avoid conflict in dates next year, the Michigan Association of Nurserymen has set January 21 to 23, 1941, as the time of its annual convention, with which is to be combined the central regional meeting of the American Association of Nurserymen.

MAIL ORDER MEN MEET.

The first meeting of the season of the National Mail Order Nurserymen's Association was held at the Krider Nurseries, Middlebury, Ind., February 16. After an enjoyable meal furnished by the Kriders, the evening was devoted to discussion of the season's business. This association represents nurseries issuing 7,500,000 catalogues annually.

Other meetings for this spring were set as follows: March 15, Galesburg, Mich.; March 29, St. Joseph, Mich.; April 12, Bridgman, Mich.; April 26, Sawyer, Mich.; May 10, Goshen, Ind.

HESS HAS FOURTH TERM.

Charles Hess, Mountain View, was reëlected president of the North Jersey Metropolitan Nurserymen's Association for the fourth term, at a meeting held February 28 at Hackensack, N. J.

Cornelius R. Kivet, Glen Rock, was elected vice-president; William Hallicy, Clifton, secretary, and Henry Hoverman, Ridgewood, treasurer. Engel Zellers and Otto Bergman, of Paramus, were elected directors.

DALLAS GROUP MEETS.

The Dallas Nursery and Landscaping Association held its third meeting, in the offices of the B. E. Williams Floral & Nursery Co., Dallas, Tex., February 26, with President John Sarver in the chair. B. E. Williams, secretary, for the benefit of nurseryman present for the first time,

"Send three copies of 'Compiling a New Nursery List.' The copy received is so valuable and is in such demand in the drafting room that I want additional copies in the library."—William E. Harries, Landscape Architect, Buffalo, N. Y.

COMPILING A NEW NURSERY LIST

Selection of Superior Varieties of Woody Deciduous Ornamental Plants

By L. C. CHADWICK

Describes and discusses the best plants among trees and shrubs in various sizes, vines and ground covers.

Lists uses, culture, characteristics, growth habits to make easy selection of suitable varieties for various landscape purposes.

Sources of supply of selected plants indicated in key list of 68 nurseries.

96 pages—40c per copy

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PHLOX PHLOX PHLOX

Remember phlox growing has long been one of our specialties. Buy your plants this spring from one of the larger growers and from a long list of good dependable varieties. Special prices on large quantity orders. We offer both heavy field-grown plants and lining-out grade.

Write for complete wholesale trade list.

SHERMAN NURSERY COMPANY
Charles City, Iowa.

Hunter Specialty Plants for April Shipment:

BLUEBERRIES. 2-yr. plants.
STRAWBERRIES—6 varieties.
HEMEROCALLIS—Modern Day Lilies.
SIBERIAN and **JAPANESE IRIS.**
Let us quote you on your requirements.
Gladiolus Bulbs, ready now, daily shipments, write for price list.

GEO. W. HUNTER — Grower
R. No. 4 Dowagiac, Mich.

Hybrid LILACS
(on their own roots)
for l. o. Also other l. o. items.
Ask for list.
THE COTTAGE GARDENS
N. I. W. Krick LANSING, MICH.

LILACS
Charles X, on own roots, 15 to 20 inches high, 1 to 3 canes. Once transplanted. $15.00 per 100. 25 at 100 rate.
30 acres of Peonies.
KLEHM'S PEONY FARMS
Arlington Heights, Ill.

BLEEDING HEARTS
Strong undivided clumps. Excellent root system.

	Per 10	Per 100
3 to 5 eyes	$1.50	$12.00
5 to 8 eyes	2.00	15.00

25 plants at the 100 rate. Cash with order.
CORLISS BROS. Inc., Nurseries
Reynard Street Gloucester, Mass.

HARDY PHLOX
Rooted cuttings for lining out. Send for prices on a selected list of varieties, including some outstanding new ones.
CUNNINGHAM GARDENS
Waldron, Indiana

QUALITY PERENNIAL PLANTS
Specialties
Gypsophila Bristol Fairy and **Dicentra Spectabilis.**
Let us quote on your perennial needs.
PERENNIAL NURSERIES Painesville, O.
Alva H. Smith R.F.D. 2

Hardy Amelia Cushion Mums
NOW READY—NOW READY
Pink, $25.00 per 1000. Red, White and Bronze, $35.00 per 1000.
YELLOW Cushion, $50.00 per 1000.
100 at 1000 rates. Catalogue.
WONDERLAND NURSERIES
ELLERSON, VA.

told of organizing rather informally February 12.

Mr. Williams also stated he had been in correspondence with the Texas commissioner of agriculture, J. E. McDonald, on the matter of securing the coöperation of the general public with the state in not purchasing uninspected and unlicensed stock and read to the group an interview with Mr. McDonald. Mr. Williams, who is also president of the Texas Association of Nurserymen, has asked nurserymen over the state to aid in securing publication of Mr. McDonald's statement in their local newspapers.

LAKE COUNTY MEETING.

Twenty-five members of the Lake County Nurserymen's Association met Monday evening, March 4, at Painesville, O., for their monthly meeting.

After dinner there was a short business session, presided over by Melvin Wyant, president. Lawrence Brick reported on the progress of the beautification drive. Then Howard Meermans, of Meermans, Inc., Cleveland, spoke on advertising for nurserymen. He explained advertising in its general terms and left its application to their own actual business to the nurserymen. Mr. Meermans stressed the importance of the advertiser's having a plan and then following that plan to get the best results for the dollars invested. D.R.D.

PAINESVILLE SCHOOL.

Over 100 nurserymen from northeastern Ohio and from Pennsylvania attended the two-day session of the school held February 22 and 23, in the federal building at Painesville, O., by the horticultural staff of Ohio State University.

Dr. L. C. Chadwick spoke on the experimental work in ornamental horticulture at the university.

John Baringer, chief nursery inspector, talked on the new Ohio nursery license law and the Japanese beetle control program.

Ray Cook, president of the Ohio Nurserymen's Association, chairman of the afternoon meeting, introduced J. S. Houser, of the Ohio agricultural experiment station, Wooster, who spoke on the control of some of the injurious insects on nursery stock.

Dr. L. D. Baver discussed a soil-

CARLOAD LOTS

ELM, American, Moline and **Vase,** up to 4 ins. All transplants.
MAPLE, Norway, up to 3½ ins. Transplants, extra select, spaced 7x7 ft.
POPLAR, Lombardy, up to 2 ins.
WILLOWS, Thurlow, up to 3 ins.
BARBERRY, Thunbergii, up to 2 to 3 ft.
SPIRÆA, Vanhouttei, up to 5 to 6 ft.
APPLE, 2-year.
CHERRY, 1-year.
PEACH.

All of above items can be supplied in carload lots.

Send for list on many other items.

C. M. HOBBS & SONS, INC.
Bridgeport, Indiana
Largest Nursery in Indiana. Est. 1875

We Specialize in
OWN ROOT FRENCH LILACS
60 Varieties. Many of the scarcer kinds not found elsewhere. All sizes up to 5 to 6 feet.
CHINESE ELM A fine stock of straight Minnesota-grown trees. 5 to 6 ft. and 6 to 8 ft.
Brand Peony Farms 251 E. Division St. Faribault, Minn.

NATIVE EVERGREENS
Rhododendron Maximum and **Kalmia,** Mountain Laurel, 18 to 24 ins. Clumps not less than 8 stems, B.&B., each, 35c; 100, $30.00. 2 to 3 ft., each, 50c; 100, $45.00. 6 to 10 ins., seedlings, 100, $2.00; 1000, $18.00.
Tsuga Canadensis, Hemlock, 6 to 12 ins., S., 100, $1.50; 1000, $12.00. 12 to 18 ins., 100, $2.00; 1000, $18.00. 18 to 24 ins., 100, $5.00; 1000, $45.00. Special price in car lots. Azaleas, Maples, Redbud, Holly, Dogwoods and many other items, in all sizes. Ask for list.
ELK RIVER EVERGREEN CO.
Butler, Tenn.

Specializing in Vegetable Roots
Asparagus • Rhubarb • Horseradish
1, 2 and 3-year-old
Also BERRY PLANTS Send for List
FIELD'S NURSERY Phone Wenonah 96 R 3
Post Office, SEWELL, Box 40, N. J.

HERBS
Pot-grown plants; over a hundred varieties. Dried Herbs for Flavoring and Fragrance. Other plants of unusual character and with the charm of old-time gardens.
New Catalogue sent on receipt of 10 cents.
WEATHERED OAK HERB FARM, INC.
Bradley Hills, Bethesda, Maryland

FOR SALE or TRADE
8 Great Dane Pups, 5½ months old. Best breed. A.K.C. Reg.
Need L.O. stock or B&B stock. Also good used digger.
SHANER'S NURSERY
New Kensington, Pa.

improvement program, stressing the importance of the "sod crop" in the rotation.

Control of diseases of nursery stock was discussed by Dr. Paul E. Tilford, of the Ohio station, Wooster.

In the evening, a dinner dance was held at the Mentor Yacht Club, with seventy-five attending. The evening program was arranged by the Lake County Nurserymen's Association.

The second day, Dr. L. C. Chadwick presented his selection of evergreens.

In "Landscape Practices Up-to-Date," Thomas Baird, Cornell University, presented his theory on how to landscape the modern home.

F. G. Haskins, Lake county agricultural agent, spoke briefly on cooperation among nurserymen.

In covering the subject, "Making Sales Wisely," Dr. Chadwick stressed the importance of satisfying the customer.

A motion picture, called "Main Street," was shown by N. M. Massey, representative of the Coca-Cola Co. The theme is sales promotion. It is used by the Coca-Cola Co. to teach its employees some of the important points of making a sale. D. R. D.

ILLINOIS BOARD MEETS.

Officers and directors of the Illinois State Nurserymen's Association met at Chicago, March 8, for the last monthly session until the spring rush is over.

Arthur H. Hill and Miles Bryant reported on the Japanese beetle quarantine hearing at Washington, D. C., at which they represented the association.

Discussion of the new regulations under the 1939 amendments to the social security act led to the decision to issue a bulletin to members on this subject.

ILLINOIS PEACH BAN.

J. H. Lloyd, director of the state department of agriculture, has placed a quarantine on shipments of peach or nectarine roots out of three southern Illinois counties without a state permit because of the presence in those counties—Marion, Gallatin and Johnson—of the phony peach disease. Last year thirteen counties were so quarantined.

The order followed a proclamation by Governor Henry Horner listing Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, South Carolina, Tennessee and parts of Kentucky, Missouri and North Carolina as infected areas. The proclamation prohibits bringing peach or nectarine roots or trees from these areas into Illinois without an inspection certificate from the state of origin.

Director Lloyd said prospects for a peach crop in Illinois this year were poor. He thinks the cold weather has killed most of the buds.

VITAMIN AND CUTTINGS.

[Continued from page 13.]

is unsafe to draw any conclusions on Pachysandra terminalis and Citrus sinensis. The poor results with cuttings of tripterygium probably were due to insufficient bottom heat in the propagating bed.

An improvement in the appearance of the tops of cuttings of Pyracantha coccinea Lalandii was noticeable in the first trial, using succulent, unripened wood. Rooting was heavier in the lots treated with vitamin B_6. However, in a second trial at a later date, using firmer wood, treatments with growth substances and vitamins were not advantageous and heavy rooting was obtained in about two weeks without treatment of any sort. This experience as well as that with the repeated trials of Symplocos paniculata may indicate that the action of vitamins and synthetic growth substances depends on internal conditions of the cuttings as affected by the time of year.

Probable Value in Propagation.

These experimental results show that treatments with vitamin B_6 produced favorable responses on cuttings of a third or more of a random selection of species of plants. The most remarkable feature of this treatment is the exceedingly low concentration of the chemical needed to produce effects of stimulation. Experiments should be conducted with even lower concentrations, since applications of thiamin have been found to be effective in dilutions as low as one part in one hundred million.

These results with vitamin B_6 do not warrant the making of extravagant claims for this vitamin and do not justify a premature commercial exploitation of the substance for horticultural purposes. Nevertheless, vitamin B_6 apparently can assist in physiological processes involved during the rooting of cuttings and must be considered in developing new treatments for improving the rooting of cuttings.

Acknowledgments.

This report includes data secured in a coöperative investigation of vegetative propagation of superior selections of economic erosion-resisting plants and also of new plant introductions difficult to propagate. These studies were conducted jointly by the Division of Plant Exploration

Radway's GRASS SEED "TESTED"

Park Central
Special Mixture of choice seeds
5 lbs. ..... $1.50 25 lbs. $6.00
100 lbs. $21.00

Sunshine
Brand for Sunny Places
5 lbs. ..... $2.75 25 lbs. $12.50
100 lbs. $45.00

Golfgreen
For shady places and perfect turf
5 lbs. ..... $3.50 25 lbs. $16.25
100 lbs. $60.00

Cash with order or C. O. D.
Write for free catalogue dept. H

Kentucky Bluegrass
White Clover
Chewing Fescue
Poa Trivialis
Dwarf Essex Rape
Redtop
Rye Grass
Timothy
Bent Grass
Red Clover

I.L.RADWANER SEED CO. Inc. 115 BROAD ST. N.Y.C.

SEEDS

	Per lb.	100-lb. rate
Abies concolor, White Fir	$2.00	$1.70
Juniperus sequiorum, Silver Cedar, d.b.	1.00	.75
Picea pungens glauca, Blue Spruce Standard	3.75	3.50
First Grade	8.50	7.00
Pinus aristata, Foxtail Pine	3.50	...
Pinus contorta, Lodgepole Pine	8.50	6.00
Pinus ponderosa, Yellow Pine	2.00	1.50
Pseudotsuga Douglasii, Douglas Fir	4.00	3.50
	¼ oz. 1 oz.	¼ lb.
Cotoneaster acutifolia, d.b.		$0.50
Lonicera involucrata	$0.50 $3.00	....
Mahonia repens	.75	2.50
Rubus deliciosus (Thimbleberry)	.50 3.00	10.00
Shepherdia argentea, d.b.	....	.85

Lining-out Seedlings

	Per 100
Mahonia Aquifolium, 2 to 3 ins.	$3.50
Mahonia (Berberis) repens, 2 to 3 ins. (a Colorado stoloniferous type)	6.00
Thimbleberry, Rubus deliciosus, 2 to 3 ins.	6.00

d.b. dry berries; c.s., clean seed.
Special discount on large quantities.
Cash with order.

Upton Gardens Mgr. C. R. Marriage

Colorado Springs, Colorado

How to SATISFY your CLIENTS

WITH LAWNS OF PERMANENT, WEED-FREE BEAUTY

Successful lawns are raised from a mixture of the varieties best adapted for permanent growth under particular local conditions. You can secure such mixtures for each of your jobs — simply take advantage of Woodruff service. Write for details. F. H. Woodruff & Sons, Inc., Milford, Conn.

Send for mail-bag of Turf Tester.

WOODRUFF LAWN SEED

Apple and Peach Trees
In Carload Lots

A long variety list to select from. We also can offer other Fruit Trees in carload lots, as well as **Tennessee Natural Peach Seeds.**
If you are interested in either **Fruit Trees** or **Peach Seeds,** send us your want lists and we will quote attractive prices.

SOUTHERN NURSERY CO.
Winchester, Tenn.

North Dakota and Montana Seeds
FORESTRY SEEDS
WILD FLOWER SEEDS
NATIVE PLANTS
Write for wholesale trade list
E. C. MORAN
Medora, N. D.

We are collectors of
NORTHERN MINNESOTA TREE SEEDS
including
Pinus Banksiana, Jack Pine
Pinus Strobus, White Pine
Pinus Resinosa, Red Pine
Picea Canadensis, White Spruce
Write for prices.
Bear Creek Evergreen Nursery
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PEACH PITS
Our Pits Compare Favorably With the Best
HOGANSVILLE NURSERIES
HOGANSVILLE, GEORGIA

and Introduction, Bureau of Plant Industry, and the Hillculture Division, Soil Conservation Service. Thanks are due to S. B. Detwiler, of the Hillculture Division, for supplying the services of his staff member, F. L. O'Rourke, who assisted in the details of propagation, and also to Merck & Co., Inc., for making available a supply of synthetic vitamin B_6.

OBITUARY.

A. T. Gossman.

A. T. Gossman, 67, president and manager of the Columbia & Okanogan Nursery Co., Wenatchee, Wash., died February 28, as a result of a heart attack at his office. Mr. Gossman, who was known as "Andy" to his host of friends throughout the district, with J. R. Snyder established the nursery in 1906 and it has long been the leading nursery in the Wenatchee section.

During recent years many leading varieties of fruit have been developed at the proving grounds of the nursery. Among these are the Richared, Shotwell Delicious and Black Jon apples, the Riland apricot and the Redelberta peach.

Surviving Mr. Gossman are a brother, John Gossman, Decorah, Ia.; two sisters, and three nephews, Willard Gossman and Robert and A. J. Snyder, of Wenatchee.

Ole Engvolsen.

Ole Engvolsen, 75, Irondale, Wash., was found dead at his home, February 24, from pneumonia. Born in Norway, he settled in Washington fifty-one years ago. At Port Angeles he operated a nursery under the names of Engvolsen Bros. and North American Nursery Co. until 1912. Moving to Irondale, he did extensive experimental work with trees and grew strawberries and other plants. Surviving are his widow and a son.

OPENING of a citrus, deciduous and ornamental nursery was recently announced by Frank Daybell, Porterville, Cal.

NEW JERSEY'S strawberry production returned approximately $784,000 to farmers during 1939. About 4,700 acres will be harvested in 1940. Average yield during last year was seventy of the 24-quart crates per acre.

PEACH TREES
in large quantities
BOYSENBERRY
1-yr. No. 1 Tips and Transplants
BLUEBERRY
1-yr. Rooted Cuttings
2 and 3-yr. Plants
STRAWBERRY — RASPBERRY ASPARAGUS PLANTS
BOUNTIFUL RIDGE NURSERIES
Princess Anne, Md.

HARDY FRUITS
Haralson Apple
Manchurian Apricots
Red Lake Currant
Fredonia Grape
Taylor Red Raspberry
Mary Washington Asparagus
Americana Plum Seedlings
Caragana Pygmæa, L.O.S.
ANDREWS NURSERY
Faribault, Minn.

If it's new for the Northwest, we have it!
In quantity, we grow:
New Red Lake Currant
McDonald and Ruby Rhuharb
Cornus Elegantissima
Cotoneaster Acutifolia
Physocarpus Monogynus
Minnesota Fruit Breeding Farm originations
SUMMIT NURSERIES
Stillwater, Minnesota

CERTIFIED RASPBERRY PLANTS
75,000 **Indian Summer** (Everbearing), **Taylor, Marcy, Chief, St. Regis,** etc. No. 1 and heavy Transplants. Quality stock. Attractively priced.
BERT BAKER Hoosick Falls, N. Y.

Wholesale Growers of
Grapevines, Currants, Gooseberries, Blackberries and Raspberries
Let us quote on your requirements
FOSTER NURSERY COMPANY, INC.
69 Orchard St. Fredonia, N. Y.

GRAPE VINES, CURRANTS, GOOSEBERRIES and BERRY PLANTS. Growing for the wholesale trade since 1890. The quality of our plants will please your most critical customers. Get our attractive quotations before placing your order.
THE F. E. SCHIFFERLI & SON NURSERIES
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We offer general line of
FRUIT TREES
Heavy on Apple and Peach. Can furnish by carload. Send us your want list. Write for prices.
COMMERCIAL NURSERY CO.
Decherd, Tenn.

Fruits and Berries

CODLING MOTH SPREAD.

Many orchardists have believed that the codling moth does not move far from where it emerges. They have pointed out that when there is a packing shed near the orchard and the insects live through the winter in the shed, the most severe damage will be to only a few rows of trees nearest the shed.

In recent years, however, entomologists have devised ways of marking flying moths so that they can be identified when they are trapped or when they drop dead as a result of poisoning. In a series of studies lasting several years, L. F. Steiner, federal entomologist, has found that he trapped some codling moths at a distance of nearly one-half mile from where they were released, that many flew a quarter-mile and passed up baited traps on the way and that the moths could usually be depended on to scatter rather thoroughly through an orchard.

The results of these studies are of particular importance in interpreting field experiments in codling moth control, especially experiments on small plots.

RED EARLY SUMMER APPLE.

A new apple variety that ripens in early summer, yet has a desirable red color, has been introduced by the bureau of plant industry of the United States Department of Agriculture.

Ripening about the same time as the Yellow Transparent, the new apple is fairly large and of fairly good quality for dessert and cooking. The tree is vigorous and yields well, and the fruit stands up well under hot weather. It has been tested at several state experiment stations and apparently is widely adapted. Good reports have come from New England and as far south as Tennessee.

The bureau developed the apple at the experimental farm at Arlington, Va. The new variety has been named the Close, from the name of the man who developed it—C. P. Close, recently retired from the Department of Agriculture.

As with most summer apples, there is a "drop" soon after the Close ripens. For this reason it is difficult to harvest all at one time for shipment, but it is expected that it will fit in well for home use and roadside trade. Some commercial nurseries now have stocks of the Close apple.

PEACH BORER CONTROL.

Reported as being more effective in controlling borers in peach trees than the standard materials now used, as being easier to apply and with less danger of injury to the tree, and above all as being less expensive, a chemical widely used in grain fumigation is now advocated for use by peach growers by Dr. D. M. Daniel, entomologist at the New York state experiment station.

The new material is an emulsion of a chemical known as ethylene dichloride and potash fish-oil soap diluted with water and applied directly to the tree regardless of age. It can be poured or sprayed about the base of the tree with equally good results and can be applied at a time when other orchard work is not pressing. The last two weeks of April and the first week in May generally prove best for spring treatment, although the dates vary according to the season.

This new treatment is more effective in cool weather than in hot weather and can therefore be used early in the season or later in the fall than can the old treatment with paradichlorobenzene, which requires a soil temperature of 60 degrees or above to be effective. It appears to be safer on young trees as well as more effective than the so-called crystal ring treatment with paradichlorobenzene.

STORE APPLES OVER YEAR.

McIntosh apples have been kept in storage successfully for thirteen months, though the normal storage life of this variety is only four or five months, by the English technique of using accumulations of carbon dioxide and less than the normal amount of oxygen in the storage atmosphere at a temperature of 40 degrees Fahrenheit. In addition the apples are free of a browning at the core, which occurs in storage in air at 32 degrees.

Commercial trials of this method are under way at Cornell University this year and the results are promising.

BLUEBERRIES IN JERSEY.

Records indicate an increase in the state of New Jersey from fifty-three blueberry growers in 1932 to 115 last year, and an expansion of 149 per cent in total bearing and nonbearing acreage from 419.5 in 1932 to 1,044.7 acres in 1939.

Despite a shift in the importance of varieties, Rubel remained the

The proof is in the testing....
USE
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Helps reduce knots and malformations among piece-root grafts.
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INDUSTRIAL TAPE CORPORATION
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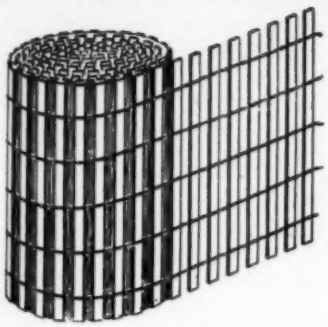

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Woven Lath Shading

4 CONVENIENT FACTORIES AND DISTRIBUTING POINTS

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Used Extensively by U. S. Forest Service

The easiest method of shielding seed beds and seedlings from the hot rays of the sun. Made in convenient rolls—4 feet wide—in 50 foot lengths. Easy to handle. Quickly moved. Lay across wooden horses and crossbars. Roll up and store when not in use.

NEBCO Woven Lath Shading is made of the best No. 1 lath, painted with red preservative. Lath is ½ inch by 1½ inch, spaced 1½ inches apart, and woven between 4 cables of No. 12½ galvanized wire.

WRITE US FOR PRICES AND ADDITIONAL INFORMATION

NEBRASKA BRIDGE SUPPLY & LUMBER CO.
40th and Leavenworth Sts. Omaha, Nebraska

NEBCO Woven Lath Shading as used by U. S. Forest Service for evergreen seedlings at Keosaugua, Iowa, nursery.

leader in acreage in both 1932 and 1939. However, Pioneer, occupying second place in 1932, dropped to sixth in popularity in 1939 and was replaced by Cabot. Rancocas moved from fourth place in 1932 to third in 1939. Rubel, Cabot and Rancocas varieties amounted to more than one-half of the total acreage of blueberries in the state.

The total 1939 bearing acreage of cultivated blueberries was 796.2 acres, as compared with 295.9 acres harvested in 1932, an increase of 169 per cent.

That a continued growth in the industry is anticipated is evident in the number of plants two years old and over in nurseries. In 1939 the number was 270,909 as compared with 99,675 in 1932. Rooted cuttings in nurseries were approximately 405,562 in 1939 as contrasted with 122,850 in 1932.

Although weather and other factors influencing yield were not favorable, the state department of agriculture's survey records an all-time high of nearly one million quarts harvested in 1939. In 1932 the harvest was about 400,000 quarts.

First commercial plantings of cultivated blueberries were made in Burlington county in 1916. In 1920 another orchard in the same county was added. Between 1920 and 1934 the industry grew moderately, but since that time it has increased rapidly. Today the blueberry industry in New Jersey is estimated to have a gross income of about $300,000 yearly.

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3 models to meet all your requirements

For every tillage and cultivation job you'll save hours of labor. In ONE operation you can prepare a completely pulverized level seed bed, thoroughly aerated, with weeds and insect life destroyed—mulching, root pruning, complete cultivation are easy for the Ariens. Renovator attachment for Bermuda grass and rebuilding lawns. Operates easily in small space. Write for details and name of nearest distributor so you can arrange for demonstration.

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CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in the American Nurseryman.]

Buntings' Nurseries, Inc., Selbyville, Del.—Spring wholesale price list of general nursery stock, 36 pages and cover, 4x9 inches.

Hillenmeyer Nurseries, Lexington, Ky.—Attractive retail circular, illustrated in colors, offering selections in perennials, roses, trees, shrubs and fruits, 12 pages, 8x9½ inches, folded to mail under permit.

Jewell Nurseries, Inc., Lake City, Minn.—Printed wholesale trade list, dated February 20, of general line of stock in 8 pages, 8½x14 inches, folded for circular mailing.

Farr Nursery Co., Weiser Park, Pa.—Retail descriptive price list of day lilies, peonies, irises, perennials, roses and lilacs, well illustrated, some pages in colors, 20 pages, 8x10½ inches.

I. E. Ilgenfritz' Sons Co., Monroe, Mich.—Wholesale price list, dated February 10, 1940, of general line of nursery stock, 72 pages and cover, 5x8 inches.

Tromble's Nursery, Bentonville, Ark.—Retail circular illustrated in colors of fruits and ornamentals in 16 pages, 6x9½ inches.

Joseph F. Martin Co., Painesville, O.—Wholesale catalogue for spring, 1940, twentieth anniversary year, offers wide variety of perennial plants, with color plates of several novelties, 52 pages and cover, 8½x11 inches.

E. B. Drake Alpine Gardens, Lakebay, Wash.—Retail catalogue of hardy native and imported alpines and perennials, 12 pages and cover, 6x9 inches.

Kingsville Nurseries, Inc., Kingsville, Md.—Wholesale list of ornamentals, including some rare and unusual plants, 32 pages and cover, 4x9 inches.

Mount Arbor Nurseries, Shenandoah, Ia.—Wholesale bulletin No. 1, dated March 1, 1940, offers complete assortment of general stock, 88 pages, 6x9 inches.

Empire Nursery & Orchard, Baileyton, Ala.—Spring price list in circular form, 6 pages, 4x9 inches.

Welch Nurseries, Shenandoah, Ia.—Retail price list, illustrated in color, of nursery stock, featuring recommendations of J. C. and Homer Welch, 32 pages, 7x10 inches.

Home Nursery, Lafayette, Ill.—Illustrated retail catalogue describes general line of stock and landscape service, 32 pages and cover, 7x10 inches.

Kelsey Nurseries, St. Joseph, Mo.—Wholesale trade list, dated February 15, 1940, offers general assortment of nursery stock, 40 pages, 6x9 inches.

Rockmont Nursery, Boulder, Colo.—Retail catalogue of trees, shrubs and perennials, 28 pages and cover, 6x9 inches.

Mitchell Nurseries, Barre, Vt.—General catalogue featuring chiefly rock garden plants, 64 pages and cover, 6x9 inches.

Richards Gardens, Plainwell, Mich.—Wholesale price list of perennial seedlings, 24 pages, 4½x8 inches. Also retail price list, 16 pages, 6¼x9¼ inches.

Carroll Gardens, Westminster, Md.—General retail catalogue devoted chiefly to perennials and rock plants, 44 pages and cover, 7x10 inches.

Forest Nursery Co., McMinnville, Tenn.—Bulletin 3, dated March 1, 1940, of shrubs, trees, vines, evergreens and cuttings at wholesale, delayed on account of checking to determine what stock is undamaged by the cold weather, according to an accompanying form letter, resulting in this 8-page circular, 8¼x13½ inches, instead of the 48-page book, 4x9 inches.

Bobbink & Atkins, East Rutherford, N. J.—Retail catalogue, beautifully illustrated in colors, featuring roses and perennials, also lists general line of nursery stock, 76 pages, 8½x11 inches.

Bagatelle Nursery, Huntington, L. I., N. Y.—Retail price list offers same stock as the firm's wholesale list and includes index, 24 pages and cover, 4x9 inches.

Koster Co., Inc., Bridgeton, N. J.—Wholesale price list, dated March 1, 1940, offers lining-out and specimen stock, in circular form, 12 pages, 4x9½ inches.

Bristol Nurseries, Inc., Bristol, Conn.—Catalogue of choice perennials, shrubs, flowering and fruit trees, with colored illustrations, 32 pages, 8½x11 inches.

Rocknoll Nursery, Foster, O.—Retail "economy" catalogue with trade discount features perennials, 48 pages, 6x9 inches.

Brainard Nursery & Seed Co., Thompsonville, Conn.—Retail catalogue of seeds, bulbs and nursery stock, 64 pages and cover, 6¾x9¾ inches.

Chase Nursery Co., Chase, Ala.—Wholesale spring surplus bulletin offers roses, lilacs, deciduous shrubs and trees, vines and lining-out stock, 16 pages, 7¾x9 inches.

Frank H. Rose, Missoula, Mont.—List of native northwest plants, featuring Lewisia redeviva, 3 mimeographed pages, 8½x14 inches.

W. & T. Smith Co., Geneva, N. Y.—Wholesale price list of fruits, ornamental trees and shrubs, evergreens, roses and perennials, 8 pages, 9x12 inches.

RITCHIE TRAVELS SOUTH.

After attending the New Jersey short course for nurserymen, Walter Ritchie, Rahway, N. J., president of the New Jersey Association of Nurserymen, traveled southward, stopping for the Maryland nurserymen's short course, then spending a few days in North Carolina and finally attending the third annual Southern Shade Tree Conference, held at the University of Florida, Gainesville, where he reported a good many of the plants looking pretty sick from the frost.

DISPLAYS GADGETS.

To aid dealers in attracting attention to the garden gadgets mentioned in these columns recently, the Lansing Specialties Manufacturing Corp., Lansing, Mich., is now furnishing them a new artist's drawing back-

Background for Display Rack.

ground for the display rack. It fits the show window, counter or floor and displays all of the Ideal garden gadgets in actual use, as may be seen by the illustration herewith.

REDUCED OVERHEAD
INCREASED OUTPUT
ASSURED BY USING
VITAMIN B1
GUARANTEED CRYSTALS

Vitamin B1 cuts down the time required (under glass and outside) to bring plants to salable size by as much as 25% to 50%. This has been demonstrated at commercial trial grounds and is an important factor in lowering costs. Vitamin B1 promotes root and plant growth, resulting in larger flowers, stronger and healthier plants.

ECONOMICAL TO USE
The cost per plant is infinitesimal. 1 gram of Vitamin B1 will make 20,000 gallons of watering solution.

1 GRAM — $5.25
makes 20,000 Gals. of Watering Solution
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$2.00 (Economy Package)—makes approx. 4,000 gals. of dilute solution.

ATTRACTIVE DEALER DISPLAY
Containing 12 bottles of Vitamin B1—$8.00—retail at $1.00 per bottle—automatic seller on any counter.

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Having been in the pharmaceutical manufacturing field for over 20 years we are in a position to supply you with a powdered crystalline Vitamin B1 that is pure, undiluted, and instantly soluble. Make your own dilution as required and save money.
Send check with order and merchandise will be shipped promptly, postpaid.

SUMMERS LABORATORIES
DEPT. A AMBLER, PA.
— PHARMACEUTICAL CHEMISTS —
ESTAB. OVER 20 YEARS

ROOTONE TO EMPLOYEES.

Upon probate of the will of the late J. Harvy Gravell, former president of the American Chemical Paint Co., Ambler, Pa., it was learned that employees of the company are the chief beneficiaries of his $3,000,000 estate.

The reason for these bequests was given in Mr. Gravell's will as follows: "It is my purpose in the distribution of my estate to place the control and ownership of it and of the enterprises which have produced it largely in the hands of my business associates and employees who have been engaged with me in the operation and management of the businesses."

In 1938 the American Chemical Paint Co. began the manufacture of Rootone. All during its manufacturing experience with this product it has carried on scientific studies at several of the state experimental stations in order to perfect the technical production and application of the new root-growth substances. Since that time Rootone has become a nationally accepted aid to plant growers, both amateur and professional. The scientific work carried on by the company has led to the introduction of Transplantone, a new companion item to Rootone and one that has application to general plant culture, particularly house plants, for stimulating growth.

When recently interviewed at the Ambler factory, the employee heirs to the $3,000,000 Gravell estate were unanimous in voicing their intention to continue with the company in their work in developing Rootone and Transplantone for even wider plant application and to maintain the policies of management as developed by Mr. Gravell.

KENTUCKY CONTRACTS.

Sealed bids for the construction and planting of roads will be received by the department of highways at Frankfort, Ky., until 10 a. m. March 22.

The project for planting the Versailles-Lexington road from the Woodford county line to the corporate limits of Lexington calls for 900 honeysuckles, 699 miscellaneous trees and shrubs, 44,245 square yards of bluegrass sod, 7,483 pounds of grass and clover seeds and 25,827 pounds of 6-8-6 fertilizer.

The project for planting the Louisville-Shelbyville road from near Middletown to the Shelby county line calls for 200 honeysuckles, 18,229 square yards of bluegrass sod and 5,082 pounds of grass seed.

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DAYLIGHT THRU
THIS AMAZING NEW GLASSY MATERIAL!
AT LAST!
A Glass Substitute that
IS REALLY TRANSPARENT
R-V-LITE VITAPANE
DAYLIGHT-CLEAR TRANSPARENT DURABLE GLASS SUBSTITUTE
R-V-LITE VITAPANE is made by an exclusive process. Transparent, to allow more light and permit easy inspection. Makes excellent insulation! Waterproof, durable, it helps maintain uniform temperatures and humidity. R-V-LITE VITAPANE is easy, quick to install . . . costs little!
DOUBLY REINFORCED
Profitable yields depend a lot on the amount of daylight young plants receive. And in addition to this maximum daylight, R-V-LITE VITAPANE allows more Vitamin D to pass through than ordinary glass substitutes. Tests prove this.
MANY USES FOR R-V-LITE VITAPANE
SATISFACTION GUARANTEED!
R-V-LITE VITAPANE is different! No gum, wax, or paraffin. Odorless, greaseless. Comes in 50-foot rolls 36-inches wide. Get R-V-LITE VITAPANE at your nearest seed or hardware dealer.
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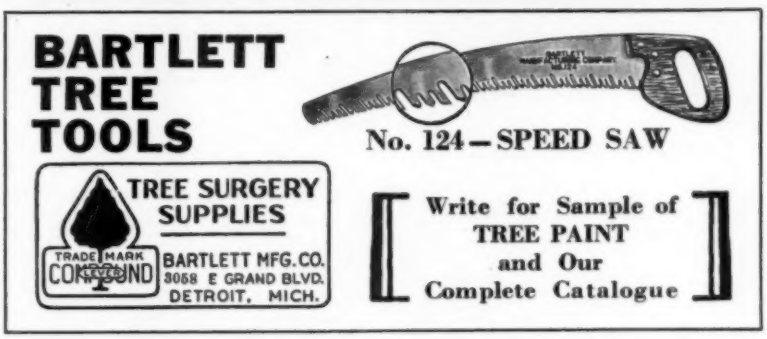

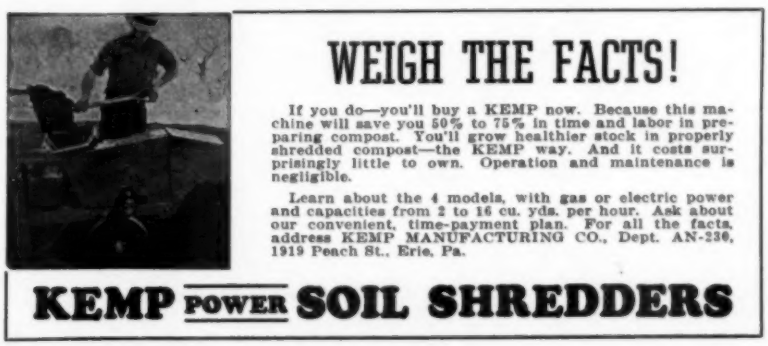
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RESULTS TALK:

"We have been so busy we have not checked up very carefully as to the returns we have received, but recall one order, which we received as a result of the 1-inch advertisement, amounting to $30.00. This we believe speaks well for your magazine. Kindly continue our present advertisement." — Kelly Bros. Nurseries, Dansville, N. Y., March 8, 1940.

"Please discontinue the advertisement in the American Nurseryman, as we have sold all the Juniper pfitzers we dare sell until digging time. We were much pleased with the results of the advertisement with you and will be back again next fall."—A. M. Augustine, Proprietor, Augustine Nurseries, Normal, Ill., March 1, 1940.

"Please discontinue my advertisement in your magazine, as we are sold out."—A. Pastor Nursery, Inglewood, Cal., February 28, 1940.

NEW RECORD

More advertisers appear in this issue than in any previous number

What the other fellow WANTS may be your SURPLUS

Sell it by advertising now in the

AMERICAN NURSERYMAN

SELECTED EVERGREENS.

[Continued from page 5.]

are placed on the discard list, being the least desirable of the species.

Some may notice the absence of Juniperus horizontalis plumosa, the Andorra juniper, from this list. Since it is a little larger than the other varieties and less inclined to spread than most of them, it is being placed in group 3 to emphasize this growth habit. It is a desirable variety and will be discussed in a later article.

The trailing juniper, Juniperus procumbens, ranks with the Sargent juniper as being one of the best and most useful forms of the low-spreading evergreens. It usually does not exceed twenty inches in height and its glaucous branches bear sharp-pointed bluish-green leaves in threes. The green midrib above and the two white spots near the base of the leaf below serve as identification points. This species is useful as a general ground cover and as a rock garden subject. It is slower growing than the creeping juniper and its varieties.

Juniperus Sabina prostrata Hillii is an introduction of the D. Hill Nursery Co. and is characterized as a low-spreading form which has appeared to be satisfactory in the few cases it has been seen.

Juniperus scopulorum prostrata was first seen growing in the nursery of Ed Jenkins, at Winona, O., and was apparently a chance seedling from a planting of the Colorado juniper. It is an interesting, compact, low-spreading type that should find ready use. It has been reported as being susceptible to juniper blight in some sections, and if this proves a common fault it should be removed from the selected list.

A few brief comments need to be made about some of the plants in the secondary and discard lists. Juniperus conferta, the shore juniper, was on the selected list when the first draft was prepared because the few plants we have had in Columbus have done remarkably well. However, reliable information from other sources would seem to warrant its placement on the secondary list, at least temporarily. In the midwest the foliage has a tendency to burn during the summer, and along the Atlantic coast, where it does better, it is reported as being difficult to grow and not too reliable. It is recommended for sandy places.

Juniperus squamata has been used

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Nursery, 30 miles from Chicago; three acres (more land available), with good home, etc., on cement highway; well stocked; very beautiful show ground, etc. All stock clean and in first-class condition. Excellent opportunity for landscape contractor. Priced very reasonably. Terms or lease to reliable party with good references.

Address No. 156, c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

FOR SALE

Do you want to own one of the finest nurseries on the Pacific coast? Here is an opportunity to purchase an old established company doing a large and profitable business with nurseries and growing grounds located in several important and favorable locations. Complete line; growers and distributors of ornamentals, fruit trees; landscaping and mail order departments. Wholesale and retail. Excellent opportunity for private capital or other large firm to establish branches.

Address No. 153 c/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

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Landscape salesman, energetic, hard working, well trained man, 25 to 30 years; must be college man, know plant materials well, keenly interested in good landscape work; must be socially acceptable, pleasant looking with desirable personality, thoroughly honest; must not be afraid of long hours. Weekly wages with overtime wages low to start but will progress with bright excellent future with growing concern.

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Tree surgeon, thoroughly experienced in pruning and cavity work. A-1 reference. Apply Towson Nurseries, Inc., Towson, Md.

HELP WANTED

Horticultural private secretary. Must be graduate of recognized horticultural school and business school, with several years' experience, or have held responsible private secretarial position in nursery or seed establishment for a sufficient number of years to be equivalent. Write, giving details of training, experience and salary expected.

LITTLE TREE FARMS
Framingham Centre, Mass.

HELP WANTED

Landscape salesman; must be capable of designing, selling and supervising work. Also thorough knowledge of evergreens, shrubs, etc.

Wiegand's Evergreen Nursery
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These home lessons cover every problem of landscaping, and we help you with any difficulties that arise.

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The ideal machine for the Commercial Grower... Goes in narrow rows... Has ample Power.

CLARK GARDNER NURSERIES
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Originators of patented **SEMI-POTTED PLANT** AND **BULB PACKAGE** for over-counter trade. Has **WATERING TUBE** and other unique features.

MILDEWS and Other Plant Diseases
..have been effectively controlled with COPOSIL Fungicide, the safer successor to Bordeaux Mixture. Preferred by nurserymen because it leaves no unsightly residue... *Send for free Primer of Fruit Control.*
CALIFORNIA SPRAY-CHEMICAL CORP.
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rather extensively as a ground cover form and is considered one of the best types by growers in some sections, especially in the east. In Ohio it is not considered nearly so good or so useful as Juniperus procumbens, which it resembles. In some plantings it has been quite susceptible to leaf miner and juniper blight. The variety prostrata, a low-spreading type, of slow growth and wide-spreading leaves, is probably better than the species.

Taxus canadensis, the Canada yew, is possibly too large for this group, as its branchlets often extend to a height of three feet. It is a creeping, spreading sort, however, and may best be placed in this group. It is suitable as a ground cover evergreen only as an underplanting in cool, shaded situations.

Most of the plants on the discard list are yellow or variegated foliage types which find little use even when the plants are satisfactory in other ways. The spreading types of Juniperus communis in this group are quite susceptible to juniper blight, and Juniperus Sabina cupressifolia is little known.

In checking the information on the low-spreading evergreens, there occurs a number of types, the names of which have no recognized standing. No doubt some of these are erroneously named, while others may be new introductions which have not as yet been described botanically.

There seems to be considerable confusion as to what constitutes the plant Juniperus chinensis japonica. Both creeping and dwarf spreading types appear in the trade. If one consults the published works of Hornibrook, Rehder or Bailey, it seems correct that the latter form is the true type of this plant. Since the name as indicated is poor, Hornibrook prefers to use the name Juniperus chinensis decumbens, which I hope will be accepted. What is carried in the trade as the creeping form of Juniperus chinensis japonica is in part, at least, Juniperus procumbens. The form listed as Juniperus japonica nana or Juniperus chinensis japonica nana is a dwarf slow-growing form of the type.

Juniperus hudsonica is listed as a low procumbent plant. The name has no standing, and the plant is probably identical or a geographical variation of Juniperus horizontalis. Likewise,

AMERICA'S TREES ARE WORTH SAVING

The Bartlett Company co-operates with the nation's nurserymen in maintaining in health and beauty the settings which they create. This service is available from Maine to the Carolinas through 32 conveniently located branch offices.

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TREE EXPERTS

PAPER POTS *BIRD'S NEPONSET*

Red Pots for shipping, etc. (light weight).
Green Pots for growing (Waterproofed).

Size	RED Price Per 1000	RED Shipping Weight	GREEN Price Per 1000	GREEN Shipping Weight
2 in.	$3.15	10	$5.50	14
2¼ in.	3.25	12	5.70	16
2½ in.	3.40	16	6.10	22
3 in.	4.20	24	7.10	28
3½ in.	5.20	34	9.50	39
4 in.	6.55	23	11.20	28
5 in.	8.90	37	15.90	44
6 in.	11.65	51	20.60	62

Sizes up to 4 inches; packed 1000 to a carton; 4 inches and up, packed 500 to a carton. Sold in carton lots only. F.o.b. New York or Boston.

Quantity Discount
5% on order of 10,000 or more.
7½% on order of 20,000 or more.
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Provided entire order is to be shipped at one time. If shipment via Parcel Post is desired, be sure to include postage.

PLANT BANDS *BIRD'S NEPONSET*

	Per 1000
2-inch	$2.65
3-inch	3.55

ROMAN J. IRWIN
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what constitutes Juniperus horizontalis glauca is questionable. Some plantsmen consider it synonymus with Juniperus horizontalis alpina, others with Juniperus horizontalis Douglasii, while still others feel it is entirely distinct. It is true that the plants carried under this name in the trade are decidedly variable, and unless a definite and distinct form can be ascribed to this plant, both the name and the plant had best be discarded. This is especially true since the majority of the forms under this name in the trade are not so satisfactory as other creeping junipers.

No authority can be found for the plant listed as Juniperus squamata Parsonii or for a creeping form of Juniperus virginiana venusta. The former may be identical with Juniperus squamata prostrata, or only slightly different and not warranting distinction. Juniperus virginiana venusta is described as an upright, columnar form. If the creeping form is a chance seedling of the variety venusta, it should be listed as such and not as the variety itself.

In closing this article as the first of a series on the selection of narrow-leaved evergreens, I should like to make a plea for a more careful check on the nomenclature used. Let's make every effort to classify correctly the plants before they are given a name that will later become very confusing. It is hoped that the new edition of "Standardized Plant Names" will help in this respect.

ARVEY CORP. EXPANDS.

February 17, the Arvey Corp., Chicago, manufacturer of R-V-Lite Vitapane, transparent glass substitute, broke ground for a factory adjacent to the present building.

The new structure will cover an area of approximately 60,000 square feet and will be of the one-story daylight type, with emphasis on large window space.

The new building will be completed May, 1940, and machinery and other equipment will be waiting for immediate installation. A. L. Greenebaum, manager of the Vitapane division, states that "wheels will start turning as soon as the roof is on," because sales have outstripped expectations so far that extra production is necessary to meet the demand.

Table of Contents

The Weather's Effects 2
See Your Printer Early 2
Code of Ethics 2
Selection of Narrow-leaved Evergreens 3
By L. C. Chadwick
Landscape Design in Practice (illus.) 6
By C. Alfred Bolgiano
Building Prospects 7
Identifying Woody Plants in Winter (illus.) 8
By Leon Croizat
Webers Join Westover 9
Spring Spray Schedule for Insects 10
By Dr. Ernest N. Cory
Vitamin B_6 and the Rooting of Cuttings (illus.) 11
By V. T. Stoutemyer
This Business of Ours 14
By Ernest Hemming
—The Tree Doctor 14
—Are Your Bookkeepers Good Salesmen? 14
Plant Patents 15
Excerpts from a Plantsman's Notebook 16
By C. W. Wood
State Wage-hour Bill 19
Camellia Collection 19
Diseases of Trees 20
By Dr. Leo R. Tehon
Viburnum Sieboldii 22
Southwestern News 22
American Association of Nurserymen 24
—Social Security Rule 24
—At Jap Beetle Hearing 24
Gladiolus Yearbook 25
Review of New Books 26
—Allwood Autobiography 26
—Nutrient Culture 26
—American Rose Annual 26
—Begonia Booklet 27
Oregon Rose Industry 28
Washington Notes 28
Another Acrostic 29
Trade Meetings 30
—To Meet at Pittsburgh 30
—Plant Board to Meet 30
—Michigan 1941 Dates 30
—Mail Order Men Meet 30
—Hess Has Fourth Term 30
—Dallas Group Meets 30
—Lake County Meeting 31
—Painesville School 31
—Illinois Board Meets 32
Illinois Peach Ban 32
Obituary 33
—A. T. Gossman 33
—Ole Engvolsen 33
Fruits and Berries 34
—Codling Moth Spread 34
—Red Early Summer Apple 34
—Peach Borer Control 34
—Store Apples over Year 34
—Blueberries in Jersey 34
Catalogues Received 36
Ritchie Travels South 36
Display Gadgets (illus.) 36
Rootone to Employees 37
Kentucky Contracts 37
Arvey Corp. Expands 40
Disease Checks Beetle 41

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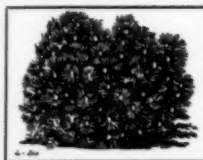

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DISEASE CHECKS BEETLE.

One of two infectious organisms that attack Japanese beetles is emerging as one of the most promising natural defenses against the injury this pest does to lawns. Known as "milky disease," it gets the name from the milky-white appearance of the infected grubs. Federal entomologists at the laboratory at Moorestown, N. J., have known of the disease for several years and have been investigating possibilities.

Extensive experiments are now under way in New Jersey to develop protective methods for use in areas now threatened. In a test, infected grubs were planted in small areas of a golf course where beetles were thick enough to ruin the sod. An unusually severe winter followed and killed eighty per cent of the beetles, but did not kill out the bacteria.

The bacteria have gradually spread over the whole golf course. As the beetles have again multiplied in more favorable seasons, the original treated areas have had fewer grubs than turf at a distance—too few to ruin the sod. And as the disease has spread, more and more of the golf course has escaped destructive attack. At times nearly half the beetles have been fatally infected. One encouraging fact is that the disease can pass through the digestive tract of a bird or animal without being destroyed. So birds hunting grubs help to spread the disease to new areas.

Entomologists have learned how to infect grubs and spread the infection to new centers. The department has no infected grubs for distribution outside the present experimental area. They are not yet ready to predict how effective this disease may be.

It is likely to be more effective in preventing the ruin of sod by grubs than in protecting shrubs, trees, and flowers from attack by adult beetles. Under favorable conditions, a lawn can maintain itself in spite of a moderate number of beetles by growing new roots as fast as the grubs destroy old ones. Even moderate numbers of beetles emerging as adults may cause considerable damage to the plants they prefer to attack.

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INDEX TO ADVERTISERS

Adams Nursery, Inc. 18
Aeroil Burner Co. 41
Alta Vista Nurseries 26
American Color and Chemical Co. 43
American Florist Supply 42
American Landscape School 39
Andrews Nursery 33
Ariens Co. 35
Arvey Corp. 37
Bagatelle Nursery 21
Bailey Nurseries, J. V. 27
Baker, Bert 33
Bardona Nursery 25
Bartlett Mfg. Co. 37
Bartlett Tree Expert Co., F. A. 39
Bealle, J. B. 25–27
Bear Creek Evergreen Nursery 33
Bobbink & Atkins 21
Bountiful Ridge Nurseries 33
Boxwood Gardens 25
Brand Peony Farms 31
Brimfield Gardens Nursery 25
Brown Bros. Co. 23
Buffa, Florist, E. 26
Burr & Co., C. R. 25
California Spray-Chemical Corp. 39
Carpenter, Geo. B. 43
Chase Co., Benjamin 43
Chase Nursery Co. 19
Clark Mfg. Co. 39
Cloverset Flower Farm 43
Coe, Ralph R. 28
Commercial Nursery Co. 33
Conigisky, B. F. 41
Connor Lumber & Land Co. 41
Continental Nurseries 21
Cook's Nurseries 26
Corliss Bros., Inc., Nurseries 31
Cottage Gardens 31
Cunningham Gardens 31
Curtis Nurseries 25
Dayton Fruit Tree Label Co. 43
Denison & Blair 29
de Wilde's Rhodo-Lake Nurseries 19
Doty & Doerner, Inc. 29
Dreer, Inc., Henry A. 24–41
Dummett, Arthur 22–26
Elk River Evergreen Co. 31
Evergreen Nursery Co. 27
Field's Nursery 31
Fike Nurseries 40
Forest Nursery Co. 17
Foster Nursery Co. 33
Fricke Co., J. E. 42
Garden Shop, Inc. 43
Gardner Nurseries, Clark 39
Gardner's Nurseries 44
Gravely Mfg. Co. 39
Greening Nurseries 24
Harmon Nursery 26
Hathaway's Nursery 40
Hauck Mfg. Co. 39
Herbst Bros. 19
Hess' Nurseries 19
Hillenmeyer Nurseries 24
Hill Nursery Co., D. 15
Hillside Nursery 40
Hinsdale Nurseries, Inc. 26
Hobbs & Sons, C. M. 31
Hogansville Nurseries 33
Holton & Hunkel Co. 27
Home Nursery Co. 28
Hood & Co., W. T. 23
Hook's Nursery 27
Hosford, William Crosby 23
Howard Rose Co. 28
Hunter, Geo. W. 31
Industrial Tape Corp. 34
Irwin, Roman J. 39
Jackson & Perkins Co. 23
Kallay Bros. Co. 25
Kelly Bros. Nurseries 23
Kemp Mfg. Co. 37
Kingsville Nurseries, Inc. 18
Klehm's Peony Farms 31
Koster Co., Inc. 21
LaBars' Rhododendron Nursery 21
Lake's Shenandoah Nurseries 17
Lansing Specialties Mfg. Co. 41
Leonard & Son, A. M. 41
Lewis Nurseries, Inc. 18
Louisville Nurseries 27
Lovett, Lester C. 21
Maloney Bros. Nursery Co. 23
McGill & Son, A. 29
McIlhenny, E. A. 17
Meehan Co., Thomas B. 19
Mehaffey, H. A. 26
Milton Nursery Co. 29
Moran, E. C. 33
Morse Co., A. B. 41
Moss Co. 43
Mount Arbor Nurseries 16
Musser Forests, Inc. 25
Natorp Co., W. A. 27
Nebraska Bridge Supply & Lumber Co. 35
Oberlin Peony Gardens 40
Offenberg Nursery Co., Paul 25
Orenco Nursery Co. 29
Outpost Nurseries, Inc. 21
Owen & Son, Inc., T. G. 27
Pacific Northwest Rose Nursery 29
Paul's Gardens 40
Perennial Nurseries 31
Peterson & Dering, Inc. 29
Pitts Studios 41
Portland Wholesale Nursery Co. 28
Princeton Nurseries 15
Process Color Printing Co. 41
Radwaner Seed Co., I. L. 32
Ransom Nursery 40
Richard, Frank M., Jr. 29
Riverside Nurseries, Inc. 27
Roberts Nursery Co. 23
Rust Mfg. Co., John 41
St. Louis Seed Co. 42
Scarff's Nurseries 24
Schifferli & Son Nurseries, F. E. 33
Scotch Grove Nursery 27
Shaner's Nursery 31
Sherman Nursery Co. 31
Sherwood Nursery Co. 29
Siebenthaler Co. 23
Southern Nursery Co. 33
Standard Engine Co. 41
State Road Nursery 21
Storrs & Harrison Co. 20
Studley, Walter A. 27
Summers Laboratories 36
Summit Nurseries 33
Swink Nursery Co. 28
Tardif Domestic Peat Sales Co. 42
Uecke Evergreen Nursery 27
Upton Gardens 33
Visser's Nurseries 25
Washington Nurseries 29
Waynesboro Nurseries, Inc. 23
Weathered Oak Herb Farm 31
Weir, Inc., J. E. 25
Westminster Nurseries 23
Williams Nursery Co., L. E. 23
Willis Nursery Co. 26
Winona Nursery Co. 21
Wisconsin Moss Co. 43
Wonderland Nurseries 31
Woodruff & Sons, Inc., F. H. 33
Wyman's Framingham Nurseries 21
Zephyr Hill Nursery 25

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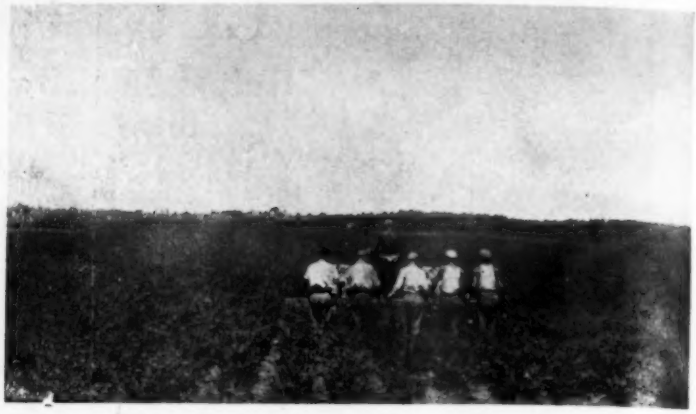

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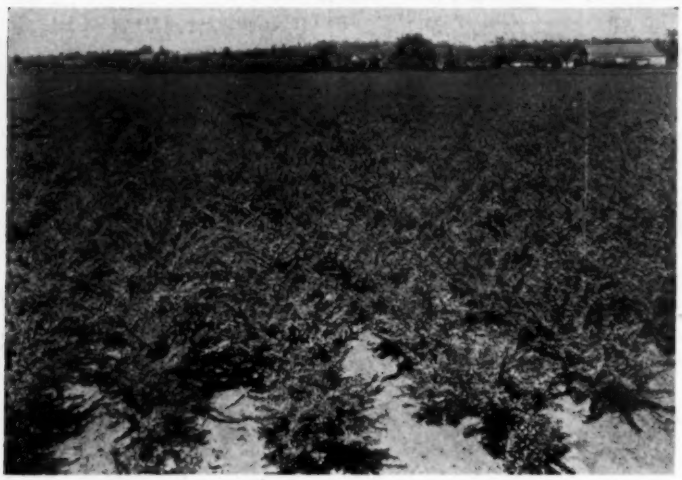

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